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THE  
JOURNAL  
OF  
**THE ASIATIC SOCIETY**  
OF  
**BENGAL.**

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VOL. VI.

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THE  
JOURNAL  
OF  
THE ASIATIC SOCIETY  
OF  
BENGAL.

EDITED BY

JAMES PRINSEP, F. R. S.

SECRETARY OF THE ASIATIC SOCIETY OF BENGAL; HON. MEM. OF THE AS. SOC.  
OF PARIS; COR. MEM. OF THE ZOOLOGICAL SOC. OF LONDON, AND OF THE  
ROYAL SOCIETIES OF MARSEILLES AND CAEN; OF THE ACADEMY  
OF NATURAL SCIENCES OF PHILADELPHIA; OF THE  
PHILOSOPHICAL SOCIETY OF GENEVA; OF  
THE ALBANY INSTITUTE, &c.

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VOL. VI.

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JANUARY TO DECEMBER,

**1837.**

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“ It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta; it will languish, if such communications shall be long intermitted; and will die away, if they shall entirely cease.”

SIR WM. JONES.

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VOL. VI.—PART I.

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JANUARY TO JUNE,  
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1837.

THE HISTORY OF THE UNITED STATES

BY

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## PREFACE.

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WE have the pleasure of closing this sixth volume of our Journal with an unexpected announcement:—the last steam packet has brought out instructions from the Honorable Court of Directors to the Government of India to “subscribe in their name for FORTY copies of the Journal of the Asiatic Society from the commencement of its publication!” We forbear to comment upon an act of liberality by which we shall personally be such a gainer, but which we have neither directly nor indirectly solicited. We can easily imagine to whose friendly influence we are indebted for it, and we hope he will accept our acknowledgments. Our principal difficulty will be how to meet the wishes of the court; for of our early volumes not a volume is now to be procured! We must seriously consider the expediency of a reprint, for we have even heard it whispered that an American edition was in contemplation, and such a thing cannot be deemed impossible when we find the Philadelphians undertaking to rival us of Calcutta in printing (and that without government support) a Cochinchinese dictionary\*!

Of local support we have lost nothing by the measure we reluctantly adopted at the beginning of the year, of raising the price of the journal from one to one and a half rupee per number. Our list is fuller than ever, and our balance sheet of a much more promising aspect.

\* M. P. ST. DUPONCEAU thus writes to M. JACQUET of Paris: “J’ai maintenant le plaisir de vous informer que la Société philosophique Américaine vient d’ordonner l’impression à ses frais de deux vocabulaires donnés à Mr. WHITE par le R. de MORRONE, ils vont être publiés dans un volume des mémoires de son comité d’histoire et de littérature, étant trop volumineux pour faire partie de ses Transactions philosophiques.

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| To balance due 1st January,                 | 1,304 | 2   | 11        | By collections this year, ..   | 3,455 | 2   | 8  |
| To printer's bills for 1836, pd.            | 5,248 | 15  | 0         | By distribution to Mem- }<br>bers of the As. Society, }                          | 1,293 | 0   | 0  |
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| To expence of circulation,                  | 421   | 11  | 9         | By sales in England, .. ..   | 415   | 6   | 0  |
| To postage ditto, ..                        | 48    | 3   | 0         | By balance due, .. .. .  | 2,488 | 10  | 6  |
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| Bills for 1837 due say, ..                  | 6,000 | 0   | 0         | Collections due by Asiatic }<br>Soc. and subs. in the }<br>three Presidencies, } | 7,139 | 7   | 5  |
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The deficiency, supposing all to be recoverable, is 1,349 13 1, or almost precisely what it was last year; so that our present price exactly pays the expenses of publication.

The bulk of the volume has gone increasing at the usual rate, and instead of eight hundred pages, we have now risen to eleven hundred, with sixty plates; too much to be conveniently bound up in one volume. We have therefore provided separate title pages to enable those, who so prefer, to divide the annual volume into two parts with an index, common to both, at the conclusion of the second part.

The prominent subject of public discussion (to imitate the order of preceding prefaces) as far as the Asiatic Society is concerned, has been THE MUSEUM,—the memorial to the local government—now under reference to the Court of Directors,—suggesting that the Society's collection of antiquities and natural history should form the nucleus of an extensive national establishment, in the present day almost “an essential engine of education, instructive alike to the uninformed, who admires the wonders of nature through the eye alone, and to the refined student who seeks in these repositories what it would be quite out of his power to procure with his own means.” It is to be hoped that this appeal to the court will not share the fate of the oriental publication memorial of 1835, which is still unacknowledged; but that we shall soon have an answer embracing the united objects of the Society's solicitude, and enabling her to advance boldly in her schemes to secure for herself, and for the British name the glory of placing ‘India physical, moral, and historical,’ upon the records of literature. What could be adduced as a more convincing ‘argumentum’ (*ad ignorantiam* dare we say?) than the fact that at this moment a French gen-

tleman of fortune well grounded in Sanskrit and other oriental studies at Paris, is come to Calcutta, 'about to retrace the steps of the French naturalists DUVAUCEL and JACQUEMONT in the interest of the antiquarian, as they travelled in that of the physical sciences.' He contemplates exploring *Gaur, Patiliputra, Magadha, Mithila, Kási, Ayudhya, Nipál, Kemaon, the Panjáb Affghanistán, Tibet*; then the *Jain* provinces, as they may be called, of *Márwár* and *Málwá*, and finally the cave antiquities of Western India\*.

We wish M. THEROULDE every success, we proffer him every aid; yet we do so not without a blush that any thing should be left for a foreigner to explore! India, however, is large enough for us all to run over without jostling, and we cannot allow that inactivity is at the present moment a reproach against our Society or our governors. We have expeditions in *Cashmir, Sinde, Bhotán, Ava, Maulmain*, all well provided with scientific adjuncts, and contributing to our maps, our cabinets, and our commerce. Our Societies were never more vigorous. The Agricultural of Calcutta is become exceedingly active. The Geographical of Bombay has opened the field with an interesting volume and a journal of proceedings; and in science we have to boast of the brilliant progress of experiment and magnetic discovery due to one whom we should be happy at having enlisted among our own members. With his colleagues of the Medical College,

\* We cannot omit to notice here another laudable demonstration of the greater honor that awaits literary merit at Paris than in London—making full allowance for the proverbial truth that a prophet must seek honor out of his own country. We have just learnt that the French Government has ordered a gold medal to be struck for, and the decoration of the Legion of Honour to be bestowed on Mr. B. H. HODGSON, in return for the valuable donation of Sanskrit manuscripts presented by him to the Asiatic Society of Paris,—and in token of their appreciation of the great services he has rendered to oriental literature. Neither in this case is the reward blindly given, nor the present disregarded; for we know that the Sanskrit scholars of Paris have already dipped profoundly into the contents of the Nipalese Buddhist volumes, and in a short time we may expect a full analysis of them. As a comment on this announcement we may add that similar donations more extensive and more valuable were long since presented by the same party to the Royal Asiatic Society and to the College of Fort William, and that (with exception of the Tibetan portion so well analysed by M. CSOMA) they remain as yet sealed books.



Professor O'SHAUGHNESSY has drawn off to their own valuable publication, the subjects of chemical and physical interest to which we should otherwise have felt ourselves blameable in not offering a conspicuous place. While far different occupations have prevented our passing in review the very promising discoveries in this novel and enticing science, to which their public exhibition has now familiarized the society of Calcutta, the sight of models of magnetic motors and explosive engines worked by gas and spark, both generated by galvanism alone, leads us to suggest that mechanics and the arts should have been included among the proper objects of our projected national museum. An Adelaide gallery would do more to improve the native mind for invention than all the English printed works we would place before them.

But we are as usual wandering from the legitimate objects of a preface. Our own attention has been principally taken up this last year with Inscriptions. Without the knowledge necessary to read and criticise them thoroughly, we have nevertheless made a fortunate acquisition in palæography which has served as the key to a large series of ancient writings hitherto concealed from our knowledge. We cannot consent to quit the pursuit until we shall have satiated our curiosity by a scrutiny of all these records—records as Dr. MILL says, “which are all but certainly established to belong to and to illustrate a most classical and important part of the history of this country.” In our hasty and undigested mode of publication, we are doubtless open to continual corrections and change of views: as a talented and amusing satire on our present predilection for old stones and old coins, in the Meerut Magazine describes it,—“if not satisfied with one account our readers have only to wait for the next journal to find it discarded and another adopted, as in the case of the Bactro-pehlevi alphabet.”

The learned M. E. BURNOUF in a most interesting article inserted in the *Journal des Savans* for June,\* says, alluding to the Burmese inscription at *Gaya* published first in the journal, and

\* On the grand work of the Chinese Buddhist traveller FOE KOUÉ KI, lately published at the expense of the French Government, through the labour of three successive editors MM. REMUSAT, KLAPROTH and LANDRESSE. Alas! when shall we in India have an opportunity of seeing these works at any tolerable period after their publication?—Ed.



afterwards more completely commented upon by Colonel BURNEY,—“ il faut le dire à l'honneur des membres de la Société Asiatique du Bengale, le zèle qui les anime pour l'étude des antiquités de l'Inde est si soutenu et si heureusement secondé par la plus belle position dans laquelle une réunion de savants ne soit jamais trouvée, que les monuments et les textes qu'ils mettent chaque jour en lumière succèdent avec une rapidité que la critique peut à peine suivre.” While they are taken up with an object once published, we are republishing or revising or adding more matured illustration to it. Some may call this system an inconvenient waste of space and tax on readers, who are entitled to have their repast served up in the most complete style at once, and should not be tantalized with fresh yet immature morceaux from month to month. We, however, think the plan adopted is most suitable to an ephemeral journal, which collects materials and builds up the best structure for immediate accommodation, although it may be soon destined to be knocked down again and replaced by a more polished and classical edifice :—*diruit ædificat ; mutat quadrata rotundis*,—may still be said of our journal, without imputing capricious motives to our habit of demolition. We build not fanciful theories, but rather collect good stones for others to fashion, and unless we advertize them from the first, with some hint of their applicability, how should architects be invited to inspect and convert them to the “benefit and pleasure of mankind?”—*hitasukhâya manusânam*,—as the stone pillars at *Delhi* and *Allahabad* quaintly express the object of their erection.

Connected with the subject of these remarks we would fain in this place give insertion (and we will do so hereafter) to a valuable series of criticisms on the matter of our last volume contained in M. JACQUET'S correspondence. It is just what we most desire. With the aid of an index, such additional information and correction is as good as if incorporated with the text, to the reader who in future days wishes to ferret out all that has been done on a particular subject ; and we would have all our contributors and readers bear in mind that our journal, though it has long changed its title, does not pretend to have changed its original character of being a mere collection of “Gleanings.”

*Calcutta, 1st January, 1838.*



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# JOURNAL

OF

## THE ASIATIC SOCIETY.

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No. 64.—April, 1837.

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I.—*Abstract of the Journal of a Route travelled by Capt. S. F. HANNAY, of the 40th Regiment Native Infantry, from the Capital of Ava to the Amber Mines of the Húkong valley on the South-east frontier of Assam. By Capt. R. BOILEAU PEMBERTON, 44th Regt. N. I.*

[With a Route Map of the country north of Ava.]

From the termination of the Burmese war to the present period the spirit of inquiry has never slept, and the most strenuous exertions have been made by the officers employed on the eastern frontier to extend our geographical knowledge to countries scarcely known but by name, and to acquire some accurate information regarding the manners, customs, and languages of the various races of men by whom they are inhabited.

The researches of Captains BEDFORD, WILCOX, and NEUFVILLE, and of Lieut. BURLTON in *Assam*, dispelled the mist which had previously rested on the whole of the eastern portion of that magnificent valley; and the general direction and aspect of its mountain barriers, the courses and relative size of its rivers, the habits of the innumerable tribes who dwell on the rugged summits of its mountains, or on the alluvial plains at their base, were then first made the subject of description, founded, not on the vague reports of half-civilized savages, but on the personal investigations of men, whose scientific attainments enabled them to fix with precision the geographical site of every locality they visited. The journey of WILCOX and BURLTON to the sources of the *Irawadi* river had proved the absence of communication between it and the great *Tsanpo* of *Thibet*, but they were unable to prosecute their examination further east; and though their researches had extended to a point not more than twenty miles dis-

tant from the meridian on which the labors of the Jesuit Missionaries in *Yunan* had been abruptly terminated, the intervening space, and great valley of the *Irawadí* still remained closed against them, and every attempt to enter either, from *Assam* or *Manipúr*, was defeated by the jealous vigilance of the Burmese authorities.

It is generally known that the course of the lower portion of the *Irawadí* river, or that part extending from *Rangún* to *Ava*, had been delineated by Lieut. WOOD of the Engineers, who accompanied Captain SYMES on his embassy to that Court; and that the features of the surrounding country, the size of the towns, its natural productions and population, had at the same time been investigated by the accurate BUCHANAN. Charts of this portion of the river, extending to *Monchabu*, the capital of the great ALOMPRA, had at a far earlier period been constructed, but the surveys were avowedly made in a manner not calculated to inspire much confidence in their accuracy; and the attention of Europe was first extensively drawn to this field of inquiry by the publication of SYMES, whose exaggerated views of the civilization, power and resources of the Burmese empire were generally adopted, while the more accurate estimates of his successor COXE were treated with comparative disregard.

In the very infancy of our intercourse with the Burman empire, and when the most persevering attempts were made to obtain settlements at various points of the coast, the more remote stations on the upper portion of the *Irawadí* river were not forgotten; and *Bamú* or *Bamo* was even then known as the emporium of a trade between the Burmese and Chinese, in which our aspiring merchants were most anxious to share. It is asserted that, at the commencement of the 17th century, factories were established in that neighborhood, but the permission to remain was shortly afterwards withdrawn, and the information which it is supposed was then obtained of the surrounding country has never been rescued from oblivion:—this is the less to be regretted as the loss has been fully compensated by the results of recent research; and the journey of Captain HANNAY, of the 40th Regiment Native Infantry, from *Ava* up the *Irawadí* river, to the frontier towns of *Bamo* and *Mogaung*, has at length rendered this hitherto inaccessible region almost as well known to us as the more southern districts, through which this noble river directs its course. Many geographical points of extreme interest have been determined by the personal observation and inquiries of this meritorious officer. *Bamo* has for the first time become accurately known from the same source—much valuable information has been gained

respecting the trade carried on between *Ava* and *China* in this remote corner of the *Burman* empire—the habits and localities of some of the principal tribes occupying the mountainous tracts bordering on western *Yunan* have been successfully investigated—the position of the very remarkable valley of *Húkong* has been determined—the *Pyendwon* or amber mines have for the first time been examined by the eye of European intelligence—the latitudes of the principal towns between *Ava* and *Múngkhong* have been ascertained by astronomical observation with a degree of accuracy sufficient for every purpose of practical utility, and they may now be regarded as established points, from whence inquiry can radiate in every direction with a confidence which the most zealous and enlightened investigators have been hitherto unable to feel in prosecuting their researches, from the want of a few previously well-determined positions at which to commence or terminate their inquiries.

To an act of aggression on the part of a *Singpho* tributary of *Ava* against a chieftain of the same clan residing under our protection, are we indebted for the opportunity of acquiring the information now gained, and the feud of two insignificant borderers may prove the immediate cause of a more intimate communication than had ever previously existed between our recently acquired possessions in *Assam* and the northern provinces of the *Burman* empire.

The *Bísa* and *Dupha* Gaums are the heads of two clans of *Singphos*, occupying the northern and southern faces of the chain of mountains, which forms a lofty barrier between *Ava* and *Assam*. The former chieftain, on our conquest of the latter country, tendered his submission and was admitted within the pale of that feudatory dependence which many other tribes of the same clan had been equally anxious to enter;—he was uniformly treated by the local authorities with great consideration, and was located at the northern foot of the *Patkoí* pass leading from *Assam* to the *Húkong* valley. Between this chieftain and the *Dupha* Gaum a feud had existed long previous to our assumption of the sovereignty of the country; and the latter, at the close of the year 1835, headed a party, which crossing the mountains from the Burmese province of *Húkong*, entered *Bísa*, the residence of the chief of that clan, and after ravaging and plundering the village, sealed their atrocity with the indiscriminate murder of all the inhabitants that fell into their hands. The circumstances were made known to the British Resident at the Court of *Ava*; inquiry was demanded, and security required against the recurrence of similar acts of aggression. A deputation from the capital was ordered



to the Burmese frontier for the purpose of instituting the necessary investigation, and Colonel BURNBY, the enlightened representative of British interests at that court, failed not to avail himself of the opportunity thus unexpectedly afforded, of attaching an officer to the mission; and Captain HANNAY, who then commanded his escort, was selected for the duty.

The party, consisting of the newly appointed Burmah governor of *Mogaung*, of Captain HANNAY and several Burmese officers of inferior rank, with a military escort, left *Ava* on the 22nd of November, 1835, in a fleet of 34 boats of various sizes, for a part of the country which had been uniformly closed against strangers with the most jealous vigilance. "No foreigners," says Captain HANNAY, "except the Chinese, are allowed to navigate the *Irawadi* above the chokí of *Tsampaynago*, situated about seventy miles above *Ava*; and no native of the country even is permitted to proceed above that post, excepting under a special license from the Government. The trade to the north of *Ava* is entirely in the hands of the Chinese, and the individuals of that nation residing at *Ava* have always been vigilant in trying to prevent any interference with their monopoly."

The mission was detained the two following days near the former capital of *Amarapura*, to complete the quota of troops by which it was to be accompanied, and whose discipline, when they did join, was very soon found to be on a par with their honesty.

"They work their own boats," says Captain HANNAY, "some of which are covered in, and others are quite open. Their musquets (if they deserve the name) are ranged here and there throughout the boat, and are never cleared either from rust or dust, and wet or dry they are left without any covering. Each man carries a canvass bag, which is a receptacle for all sorts of things, including a few bambú cartridges. He wears a black *Shán* jacket and a head dress or *goung-boung* of red cotton handkerchief, and thus equipped he is a complete Burmah militia man. They appear on further acquaintance to be better humoured than I at first thought them, but they are sad plunderers, and I pity the owners of the fields of pumpkins or beans they come across. I have remarked that whatever a Burman boatman eats in addition to his rice, is generally stolen."

Except at *Kugyih*, where there are said to be several Christian villages, of which, however, no satisfactory information could be obtained, the progress of the mission was unmarked by any circumstance of interest, until its arrival at *Yedan*, where they entered the



first *kyouk-duen*, or rocky defile, through which the river directs its course. Lower down, the extreme breadth of the stream had varied from one to two and a half miles, but here its width was contracted to less than a quarter of a mile, with a porportionate increase in the depth and velocity of the current. During the rainy season of the year, boats shoot through these narrow passes with terrific velocity, and the numerous eddies caused by the projecting rocks, add greatly to the danger of the passage. In this part of their course, the mission frequently met large rafts of bambús descending from the *Shúeli* river, and upon them, small baskets of pickled tea, brought from the hills to the south-east of that river. This tea was said to be manufactured by a race called *Pulong Puon*, who are under *Momeit*. At *Tsingú*, Captain HANNAY saw three native Chinese from *Thengyíchú* or *Mounyen*, and several others in the service of the noblemen of the court, had accompanied the expedition from *Ava* with the view of proceeding to the *Kyook Tsein*, or Serpentine mines near the sources of the *U'ru* river, west of the *Irawadi*. On the 30th of November the party left the village of *Yedan Yua*, where a perceptible change takes place in the character of the country and river. "The latter," says Captain HANNAY, "from covering an extent of miles is sometimes confined within a limit of 150 yards, without rapids or torrents, as I had expected, but almost as still as a lake. In some places its depth is very great being upwards of 10 fathoms. It winds through beautiful jungle, in which the *pípal*, *símal* trees, and bambús, are conspicuous, and it has, generally speaking, a rocky bed and banks, which last rise to a considerable height, and composed of sandstone, which varies from dark to a white and yellow color." At the next stage, or *Thihadophya*, Captain HANNAY mentions a very remarkable instance of the tameness of the fish, which are not allowed to be killed, and are found from about a mile below the village to an equal distance above.

"If rice is thrown into the water from the boat, a dozen fish, some of them as much as three and four feet long, come to the surface, and not only eat the rice, but open their mouths for you to put it in, and they will allow you to pat them on the head, which I and some of my followers actually did. Some of these fish are apparently of the same species as those called in India *gúru* and *rúta*: indeed the Hindus who are with me called them by these names. The breadth of head is remarkable, and the mouth very large; they have no teeth,—at least so the people told me, whom I saw feeling their mouths." This spectacle, strange as it must have appeared, was hardly more so

than the adventure of the following morning, when Captain HANNAY "was awake by the boatmen calling to the fish to participate in their meal."

On the 1st of December the expedition arrived at *Tsampaynago*, which has been before mentioned as the limit, beyond which, even natives of the country are not permitted to proceed without an express order from the Government. The custom-house or thana is on the right bank of the river, and *Malé myú* which is close to it, contains about 800 houses with many very handsome gilded temples.

The Myothagyí or deputy governor of the town, is also the custom officer, and a tax of 15 ticals per boat is levied on the Chinese coming from *Bamo*. Old *Tsampaynago myo* is situated at the mouth of a small river which flows from *Mogout* and *Kyatpen*, and falls into the *Irawadí* immediately opposite the modern chokí of that name. The sites of *Mogout* and *Kyatpen*, where some of the finest rubies of the kingdom are obtained, were pointed out to Captain HANNAY as lying in a direction N. 80° E. of *Tsampaynago*, and about 30 or 40 miles distant, immediately behind a very conspicuous peak called *Shueú Toung*, which he estimated at 3,000 feet high. The *Madara* river, as well as that of *Tsampaynago*, flows from the same mineral district which must greatly facilitate communication with it. The inhabitants of the country were unwilling or afraid to communicate any information regarding these secluded spots, and their exact locality is still a subject of conjecture. The mines are described as in a very swampy situation, and surrounded at a trifling distance by lofty hills. The three places at which the gems are principally sought, are *Mogout*, *Kyatpen* and *Loungthé*, and the principal miners are Kathays or Manipúris, with a few Chinese and Shans. The other most celebrated spot is *Momeit*, the site of which BUCHANAN found some difficulty in determining, but which Captain HANNAY learnt was not more than two or three days' journey, or between 20 or 30 miles north of *Mogout* and *Kyatpen*. While at this place Captain HANNAY says, "they heard the people who were cutting bambús in the hills, rolling bundles of them down the face of the steep. Having made a road by felling the trees, the woodmen allow bundles of 150 and 200 bambús to find their way to the bottom, which they do with a noise that is heard at the distance of eight miles. They are then floated down the small river into the *Irawadí*, but this operation can only be effected during the rains." The party now began to feel the cold excessively, and its severity was greatly heightened by a strong northerly wind, which seldom subsided until the afternoon, and was particularly keen in the narrow passes or *kyouk-dwens*.

*Tagoung Myú*, which was reached on the 5th of December, is an object of peculiar interest, as it is said to have been built by a king from Western India, whose descendants afterwards founded the kingdoms of *Prome*, *Pagan* and *Ava*. Captain HANNAY found the walls of the old fort dwindled away to a mere mound, and hardly discernible from the jungle with which they were covered; but adds, "that enough is still seen to convince one that such a place did formerly exist. The fort has evidently been parallel with the river, and is on the left bank which is high and composed of sandstone. About half a mile inland, the remains of the inner walls run north and south, with an opening or gap to the east, in which there is an appearance of a considerable ditch, which I was told is filled with water in the height of the rains. The whole has more the appearance of an old brick fort, than any thing I have seen in *Burmah*, and I should say it had been built by a people different from the present race of Burmans."

About a mile to the south of *Tagoung* are the extensive ruins of *Pagan*, which stretch as far as the eye can reach, and here Captain HANNAY discovered impressions of Hindu Buddhist images, stamped upon a peculiar kind of brick composition (*terra cotta*), and with inscriptions which he imagined to be written in some variety of the *Deva-nágrí* character. The Burmese on the spot were unable to explain their nature or origin, and the learning of an aged priest proved equally incompetent to the task of deciphering them:—they were subsequently, however, submitted to some Burman antiquarians at the capital, by the Resident, whose paper on the subject and a drawing of the images appeared in the 51st No. of the *Journal of the Asiatic Society*.

At *Shwezi-goung*, a large pagoda among the ruins of *Tagoung*, Captain HANNAY obtained an extensive view of the subjacent country, and more accurate information of the site of the celebrated mines of *Momeit* than had been practicable at an earlier period of his voyage. From these accounts it appears that the locality which is said to produce the finest rubies in the kingdom, is about forty-five or fifty miles east of *Tagoung Myú*, from whence it can be reached by a foot traveller in three or four days, and by a laden bullock in ten. A drove of these animals was just about to leave *Tagoung* for *Momeit* on Captain HANNAY's arrival, and from the owners he learnt "that after selling their *ngapee* (potted fish) at *Momeit*, *Mogout* and *Kyat-pen*, they proceeded to the country of the Palongs, which bounds the district of *Momeit* on the east, and purchase tea, both pickled and formed into balls, a part of which is brought to *Ava*." The fish,

which apparently forms the staple of the trade, is said to be of a remarkably fine description, and is dried in a manner peculiar to *Tagoung*.

On the left bank of the river, between *Henga-myo* and *Tagoung*, the teak tree first begins to appear, and at *Kyundoung* on the opposite side, it is said, that timber is found sufficiently large to form a boat from a single tree; it grows principally on the western face of the hills, at whose eastern base *Kyundoung* stands. A delay of two days at this village enabled Captain HANNAY to ascend to the summit of the first range of hills, by the road which leads across them to the valley of the *Mú* river: he found it a well-beaten track and great thoroughfare, by which the inhabitants of the country as far west as *Wantha Myú*, are accustomed to convey their supplies of fish, salt and oil from *Kyundoung*, a place apparently of some trade: the bazaar contained 50 shops which were large and supplied with British piece goods, uncleaned cotton, silk, and cotton Burman dresses, coarse white cloth and other articles of country manufacture. "Besides these," adds Captain HANNAY, "I saw three Chinese shops, where spirits and pork were sold. The streets were crowded with people from the interior, who had come to make purchases, and amongst them were several *Kadús*, a race of people of a different origin from the Burmahs, and scattered over the tract of country between this and *Mogaung*. They are most numerous in the districts of *Manli* and *Mankat* situated on the *Meza* river\* which comes from the north and west, and runs between the *Kyundoung* range and that called the *Thegyain* range, still seven or eight miles north of our present position. Rice, being the staple of the country, is an article of barter, and is sent in considerable quantities to *Ava*. Cotton, brought from the interior, is also an article of barter, and a good deal of it is sent to *Bamo*, but a part of it is made into cloth on the spot, as I saw several looms at work. Yellow and red cotton handkerchiefs of British manufacture sell here for two ticals a piece, which is about 100 per cent. beyond the price at *Ava*."

To this point of their progress, no diminution in the volume of the *Irawadí* was perceptible, and the channels proved sufficiently deep for the passage of large boats, from which we may infer that all the principal feeders or affluents, which pour their tributary streams into the *Irawadí* were still further north, and had not yet been reached. The first of any importance noticed is, the *Shue lí khyoung* on the left bank, the northern branch of which flows from the Chinese fron-

\* A small stream not more than fifty yards broad, with but little water.



tier town of *Santa-fá*, called by the Burmahs *Mola Santa*, and a southern branch from *Momeit*, the site of the celebrated ruby mines already noticed: the confluence of these streams is represented as occurring at the village of *Laha* about 40 miles from the *Irawadí*. Neither branch can be of any magnitude, for Captain HANNAY remarks that at the point of junction with the *Irawadí*, the breadth of the *Shuéli* is not more than 300 yards, and that it contained but little water,—a satisfactory proof that, this stream can have no connexion with the *Tsanpo* of *Thibet*.

At *Yebouk yáa*, a day's journey above the *Shué khyoung*, two boats passed the party with Chinese in them from *Bamo*. "They work their boats which are of the Burman round-shaped flat-bottomed description, and seem to be of a tolerable size, as there must have been at least twenty men in each. These boats are particularly well adapted for the navigation of the *Irawadí*, as they do not draw more than 18 inches of water."

On the 13th of December the party reached *Katha*, a town of some extent on the right bank of the river, containing about 400 houses, and a population whose numbers appear to be annually increased by large parties who come from the interior, and take up a temporary abode on the right bank of the river, and on the numerous islands and shoals in its bed, for the purpose of fishing and traffic: at the close of the season they return to their respective homes in time for the resumption of agricultural labour, and a traveller ignorant of this no-made custom, which appears to be very general in the upper part of the *Irawadí*, would form an exaggerated estimate of the population of the towns and villages in which they are thus temporarily congregated. "The bazar of *Katha* was well supplied with good native vegetables of various sorts, fresh and salt fish, pork sold by Chinamen, dried cocoanuts, sugar-cane, and rice from the coarsest to the best quality, the latter selling at 15 ticals a hundred baskets." Captain HANNAY also saw a small quantity of stick lac in the bazar, but it was dear, and of a description very inferior, to that which is procurable at *Rangún*, and is brought from the *Shán* territory east of *Ava*. Even at this remote spot there was a 'tolerable display' of British piece goods, but not nearly to the extent noticed at *Kyundoung*. Captain HANNAY mentions a *Kyong* or monastery recently erected by the *Myothagí* of *Katha*, as one of the most remarkable objects of the place. "It is a large wooden building covered with beautiful carved work, and situated near the river. The grounds surrounding it are extensive, and very tastefully laid out with fruit trees and flowery shrubs,

amongst which I saw the Chinese rose in great plenty." The river is here confined by lofty banks not more than two furlongs apart, but the stream is very deep, and the spot appears to be a particularly favorable one for obtaining a good section of the river, the velocity of which at *Wegyih*, a village above *Katha*, Captain HANNAY estimated at one mile and a half an hour, with an average depth of 18 feet. This would give a discharge of about 52,272 cubic feet per second, while that of the *Ganges* at the same season may be assumed on RENNELL's authority at 80,000 feet per second, giving for both a proportion of 1 to 1.53. No satisfactory comparison can, however, be yet instituted between these magnificent rivers, for up to the present moment we are without a single section of the *Irawadí*, which could be safely assumed as the basis of a calculation sufficiently accurate for such a purpose.

At *Kyok-gyih*, which the party reached on the 17th, they had fairly entered the remarkable curve in the *Irawadí* which had been previously represented in all our sketches of the river, and served, in the absence of more accurate information, as a point of reference, generally well known to the Burmahs and Sháns. Here there is a ledge of rocks, over which the stream passes with so great a degree of rapidity, as to render it very difficult of navigation during the rains. The rocks are serpentine and the sand collected amongst them appeared to be a mixture of small garnets and iron sand. The right bank of the river, for two miles below *Kyok-gyih*, is composed of small round stones and sand, and Captain HANNAY was told that the natives wash the soil for gold.

No circumstance throughout this voyage afforded a more gratifying proof of the friendly feeling generally of the Burmese authorities, than the attentions which Captain HANNAY received at every place at which they halted. Houses were erected for his accommodation at the various stages of the route, differing in no respect from those intended for the *Myúwún* of *Mogoung*; presents of fruit, rice, and vegetables were daily made to himself and followers, and the supposed tedium of his evenings was relieved by a band of singers and dancers, who are found at almost every town and village in the Burman empire. At *Kyok-gyih*, these attentions were shewn to a very remarkable degree by the *Woon* of *Munyen*, "whose civility," says Captain HANNAY, "was the subject of conversation with every one in the fleet.

"Every individual has received sufficient rice and fish for two days' supply, and my boat was filled by him with all sorts of provisions, enough certainly to last myself and my followers for a week." The

house of this liberal Woon, Captain HANNAY describes "as a very neat and comfortable dwelling, with a remarkably clean compound, in which there is a garden laid out with a great deal of taste, and, besides many articles of costly Burman household furniture, he has a number of very fine muskets and other arms." The party had now approached within a comparatively short distance of *Bamo*, and the vicinity of this celebrated mart was shewn, in more numerous villages than had been seen for several preceding days. From *Shuegú Myú* to *Balet*, a distance of three miles, the houses appeared to extend in an uninterrupted line, and *Kywún do*, the name of a celebrated island in the river, covered with 100 pagodas, is most conveniently situated between these towns, the inhabitants of which hold their principal festivals upon it, at particular seasons of the year.

Near this spot, is the entrance to the second *kyouk-dwen*, the scenery of which appears to be very magnificent, and is thus described by Captain HANNAY. "The river passes directly through the hills, which rise perpendicularly on both sides to the height of 400 feet; they are rocky, and of irregular and singular forms, having at the same time a sufficient number of trees on them to render the scenery very striking. One part of the range, on the right bank, rises as perpendicularly as a wall to the height of 500 feet, forming a grand and terrific precipice. This *kyouk-dwen* extends for four miles, and the hills which form it, are throughout of a rocky nature. The upper part of them appeared to be sandstone, resting on a base of blue-colored limestone, mixed with veins of beautiful white marble; and at one spot I saw large masses of compact and foliated primitive limestone, along with calcareous spar in large pieces."

*Koung-toun*, which the mission reached on the 20th, is said to contain about 200 houses, and is noted for the defence made by its Burmese garrison, against a large invading force of Chinese during the last war between these two nations. A ditch surrounds the town, and the remains of a brick redoubt, loop-holed for arrows or musquetry are still perceptible encircling a pagoda. "This is now all that is to be seen," adds Captain HANNAY, "of the old fortification, but the town is still surrounded by a double palisade of bambús with sharp stakes placed between them." These defences are intended for the protection of the inhabitants against the Kakhyens, a tribe occupying the hills to the east, who frequently come down in small bodies for the purpose of carrying off cattle. Captain HANNAY saw a great number of this tribe at *Koungtoun*, where they barter their rice and cotton for salt and *gnapee*, (potted fish) and describes them, with few



exceptions, as perfect savages in their appearance ; their cast of countenance forms a singular exception to the general rule, for it is not at all Tartar in its shape, but they have, on the contrary, " long faces and straight noses, with a very disagreeable expression about the eyes, which was rendered still more so by their lanky black hair being brought over the forehead so as entirely to cover it, and then cut straight across on a line with the eyebrows. These people, though surrounded by Sháns, Burmese and Chinese, are so totally different from either, that it is difficult to imagine from whence they have had their origin."

On the 20th of December the fleet moored at a village about five miles below *Bamo*, which being a town of great importance, and the residence of an officer inferior in rank to the *Mogoung Woon*, some previous arrangements were necessary to enable the latter to land with the éclat due to his rank. On reaching the town late on the following day, they found the left bank on which it stands so precipitous, that they were compelled to cross to the opposite side of the river, and a feeling of jealousy having arisen between the two Woons of *Mogoung* and *Bamo*, the former resumed his journey on the 22nd, which compelled Captain HANNAY to defer the inquiries he was so anxious to make until his return in April, when he found the people far more communicative than they had ventured to be in the presence of the *Mogoung Woon*. The information obtained on both occasions will be more advantageously shewn in a connected form than in the detached portions in which it necessarily appears in his journal, and Captain HANNAY's first remark solves a difficulty, which, like the *Adria* of ancient history, has proved a stumbling block to modern investigation. In the course of inquiry into the sites of the principal towns on the *Irawadí* river, that of *Bamo* naturally held a very prominent place, and some of the native Sháns, who were questioned on the subject affirmed that it was on the bank of the *Irawadí* river, while others, whose opportunities of acquiring information had been equally good, positively denied this statement, and fixed its position on the left bank of a small stream which flows into the *Irawadí*, about a mile above the present town. Captain HANNAY reconciles the conflicting statements, briefly but satisfactorily, in the following remark :—

"I find that this is a *modern* town erected on the banks of the *Irawadí*, for the convenience of water carriage between it and *Ava*. The *old* Shán town of *Manmo*, or *Bamo*, is situated two days journey up the *Tapau* river, which falls into the *Irawadí* about a mile above

the new town of *Bamo* or *Zee-theet-zeit*, or new mart landing-place."

"This modern town," says Captain HANNAY, "is situated on high unequal ground, and the bank towards the river is from 40 to 50 feet in height, and composed of clay. With the exception of *Ava* and *Rangún* it is the largest place I have seen in Burmah, and, not excepting these places, I certainly think it the most interesting. The novelty of so large a fleet as ours passing up (and no doubt, having heard that a European officer was of the party) had attracted a great crowd of people to the river side, and on landing, I felt as if I were almost in a civilized land again, when I found myself amongst fair complexioned people, wearing jackets and trowsers, after being accustomed to the harsh features and party-colored dress of the Burmans. The people I saw were Chinese from the province of *Yunan*, and Sháns from the Shán provinces subject to *China*. *Bamo* is said to contain 1500 houses, but including several villages which join it, I should say it contained 2000 at least, 200 of which are inhabited by Chinese. Besides the permanent population of *Bamo*, there are always a great number of strangers there, Chinese, Sháns, and Kakhyens, who either come to make purchases or to be hired as workmen. There are also a great number of Assamese both in the town and in the villages immediately connected with it, amongst whom are several members of the *Tapan* or *Assam Rája's* family. *Bamo* is the jaghire of the *Tapan Rája's* sister, who is one of the ladies of the king of *Ava*.

"The inhabitants of this district live in large comfortable houses, which are thatched with grass, and walls made of reeds. They are generally railed in, and all the villages have bambú palisades surrounding them. The Palongs of the Chinese frontier are, I am told, remarkably industrious. They are good dyers, carpenters and blacksmiths, and all the *dhas* or swords used in this part of the country are made by them." "I received," adds Captain HANNAY, "great attention from the Myúwún of *Bamo*, and also from the head Chinese there; they sent me tea, sugar, dried fruits, and vegetables, for which I, of course, made a suitable return. The annual caravan from *China* had not arrived, and the supply of Chinese articles in the shops was very small."

The people of *Bamo* were so strongly impressed with the idea that Captain HANNAY's only object was to find a road by which British troops might penetrate to *China*, that he found it extremely difficult to obtain any information from them regarding the routes into that country. The Chinese themselves, however, proved more com-

municative, and from them he learnt the existence of several passes from *Bamo* into *Yunan*; but as one of these presents far greater facilities of transit than the others, it is generally adopted for commercial intercourse, and the mode of carrying it on is thus described. "At the distance of two miles\* above *Bamo* the mouth of the *Taping* or *Tapan* river is situated. This river has a direction N. 70 E. for about two days' journey, when it cuts through the *Kakhyen* range, and under these hills, old *Bamo*, or *Manmo*, is situated. To the latter place the Chinese take their merchandise from modern *Bamo* by water, and then proceed overland to the *chokí* or *ken* of *Loailong* near *Mowan*, which they reach in three days, and from thence to *Mounyen* or *Tengyecheu* in the province of *Yunan*, at which place they arrive in eight or nine days. The road from *Bamo* to *Loailong* is through the hills, which are inhabited by *Kakhyens* and *Palongs*, after which it passes through the country of the *Sháns*, called by the *Burmans*, *Kopyi-doung*. The road is described as being very good, and quite a thoroughfare. The *Tapan Khyoung* is not navigable for large boats, in consequence of which the Chinese use two canoes tied together, with a platform over them, for the transport of their merchandise to *Manmo* or old *Bamo*, and for the remainder of the journey it is carried on ponies or mules."

This description of the size of the *Tapan Khyoung*, which is also called by the *Sháns* *Numtaping*, completely sets at rest the keenly agitated question of its identity with the *Tsanpo* of *Thibet*, and the theory of *Klaproth*, (who, on the authority of Chinese writers, calls it the *Pinglankhyoung*, and maintains it to be the prolongation of the *Tsanpo*) is shewn to have no better foundation than his unauthorized change in the position assigned to the latter river, in that part of its course which passes through *Thibet*. Captain *HANNAY* describes the *Taping* as not more than 150 yards broad, and with only sufficient water to float a small boat. The *Singphos* affirm that it is a branch of the *Shuelí Khyoung* (the *Lungshué kiang* of the Chinese) from which it separates above *Momein*, but the accuracy of this report appears highly questionable.

The principal article of trade, which is cotton, is entirely in the hands of the Chinese, who arrive at *Bamo* in the months of December and January. The greater part of their imports is taken to *Ava*, as neither the natives of *Mogaung* nor *Bamo* could afford to purchase them. "What they dispose of here," says Captain *HANNAY*, "are copper pots, carpets and warm jackets." These articles are also

\* In another place it is mentioned as only one mile above *Bamo*.

taken all over the Burman territories, as far west as the *Khyendwen*. There are several cotton godowns here, belonging to the Chinese, and there are constantly residing in the town 500 of these people, which, with the numerous arrivals from different parts of the country, gives the place a very business-like appearance, and there is of course a good bazar." There is a very neat temple built by the Chinese of *Bamo*, which Captain HANNAY visited, and was most politely received by the officiating priest. "On entering his house," says Captain HANNAY, "he rose to meet me, saluted me in the English fashion, asked me to sit down, and ordered his people to bring me tea; after which he sent a person with me to shew me the curiosities of the temple. Most of the figures were carved on wood, and different from what I have generally seen in Chinese temples; one of them represented the *Nursinga* of the Hindus. The Chinese of *Bamo*, although different from the maritime Chinese, in language and features, have still the same idea of neatness and comfort, and their manners and mode of living appear to be much the same."

"Their temple and all the houses, which are not temporary, are substantially built of bricks stained blue; the streets are paved with the same material, and the grounds of the temple are surrounded by a neat brick wall covered with tiles." "Besides the trade carried on at *Bamo* by the Chinese, the Sháns, Palongs, and Singphos under *China*, are great purchasers of salt, *gnapee*, dried fish, and rice, but particularly salt, which is in constant demand; and to procure it, numbers of the above named people come to *Bamo*, *Sambaungya* and *Kountoung*. The salt which sells here for twenty ticals of silver for 100 vis, or 28 rupees for 150 seers, is brought principally from *Shein-maga* above *Ava*, and from *Manbú*, which is situated two marches west of *Katha*. The Sháns here are distinguished by their fair complexions and broad good-tempered faces. They wear turbans and trowsers of light blue cotton cloth; they greatly resemble the Chinese, and from living so near that nation, many of them speak the *Yunan-Chinese* language. They inhabit the country to the east of *Bamo*, and their principal towns are *Hotha*, *Latha*, *Santa*, *Sanla*, *Moongsye*, *Moong-woon*, *Moong-man*, *Moong-la*, and *Moong-tye*. The people are generally designated Shán Taroup or Chinese Sháns."

"Although the Palongs speak the Shán, their own native language is a distinct one. The men, though small in stature, are athletic and remarkably well made. Flat noses and grey eyes are very common amongst them. They wear their hair tied in a knot on the right side of the head, and dress in a turban, jacket, and trowsers, of



dark blue cloth. They are a hill people, and live in the tract of country situated between *Burmah* and *China*, but those to the east of *Bamo* pay no revenue to either country, and are governed by their own *Tsobuas*. The *Singpho* traders I saw at *Bamo* were very different from those under *Burmah*, and according to their proximity to either *Sháns* or Chinese, they assimilate to one or other in dress and language."

"The whole of these people," says Captain HANNAY, "pay for every thing they require in silver; and were it not for the restrictions in *Burmah* on the exportation of silver, I think an intelligent British merchant would find it very profitable to settle at *Bamo*; as, besides the easy intercourse with *China*, it is surrounded by numerous and industrious tribes, who would, no doubt, soon acquire a taste for British manufactures, which are at present quite unknown to them." The revenue of the district is estimated by Captain HANNAY at three lakhs of rupees per annum; and he adds, "If appearance of comfort may be taken as a proof of its prosperity, the inhabitants of *Bamo* shew it in their dress and houses. I have seen more gold and silver ornaments worn here than in any town in *Burmah*."

On leaving *Bamo*, the appearance of the country became much more hilly, and great precautions were taken to guard against surprise by the *Kakhyens*, who inhabited the different ranges in the vicinity of the river.

At *Hukan* the escort was reinforced by 150 soldiers from *Bamo*, and a number of families who were proceeding up the river, joined the fleet to enjoy the protection afforded by so large a convoy. The *Sháns* who composed the quota from *Bamo* were a remarkably fine set of men from the banks of the *Tapan Khyoung*, and formed a striking contrast, in dress and appearance, to the miserable escort which had accompanied the party from *Ava*.

At the village of *Thaphan-beng* they entered the third *Kyook-dwen* from which a very beautiful view is obtained of the fertile valley of *Bamo*, bounded on the east by the *Kakhyen* hills, which are cultivated to their summits. Serpentine and limestone were the principal rocks found in this defile, as well as the preceding one; and as the river was here in some places not more than 80 yards broad, with a depth of 30 feet, and its rise is in the rains 50 feet above the present level, the rush of waters must at that season be terrific. The natives, indeed, declared, that the roar at that time was so great, as to prevent them from hearing each other speak, and that the defile could only then be traversed on rafts: now, however, it coursed gently along with an almost imperceptible motion.

At *Thabyebeng-yúa* they found a new race of people called Phwons, who described themselves as having originally come from a country to the north-east, called *Motoung Maolong*, the precise situation of which could not be ascertained. Their native language, which they speak only in intercourse with each other, differs altogether from the Shán and Burmese, but they have no written character. There appear to be two tribes of this race, distinguished by the Burmahs as the great and small:—the former are found only at *Tshenbo* and in the vicinity of the third *Kyouk-dwen*, while the inferior tribe is scattered all over the country: the only difference apparently between them consists in some trifling varieties in the dialects they speak. Their extensive cultivation proved their agricultural industry, and four Chinese Sháns were constantly employed in manufacturing their implements of husbandry. Their houses were of a construction totally different from any that had been previously seen, and consisted of a long thatched roof rounded at the ends and reaching almost to the ground. Inside of this and at the height of eight or ten feet from the ground, the different apartments are formed, the walls of which are made of mat.

“From the outward appearance of these houses,” says Captain HANNAY, “it would be difficult to imagine that they were habitations, but inside they are very comfortable, and from the great thickness and peculiar form of the roof, the inmates cannot be much affected either by heat or cold.” The same description of house is built by the Sháns occupying the valley of *Kubo*, and it is probable that the Phwons have adopted this style of building from some tribe of that widely scattered nation.

On the 26th the fleet reached a part of the *Irawadí*, which is considered the most dangerous point in its navigation. It is called *Puská*, and the stream is there confined to a breadth of 30 yards, but with no less than nine fathoms of depth in the centre. The rocks bore every appearance of fierce and irregular volcanic action, varying in color “from brown, yellow, red and green, to a jet black which shone like a looking glass.” The strata also presented a scene of great confusion, some being vertical, some horizontal, and others twisted; “the whole having exactly the appearance of having been poured out from a furnace.”

The navigation of the *Irawadí* river up to this point had been unmarked by difficulties of any magnitude, and, with the exception of the passes through the *Kyouk-dwens*, the channel appears to have afforded, even at that season of the year, an abundant supply of water for the

largest class of boats, which ply between *Ava* and *Bamo*: above the village of *Namhet*, however, they first met a succession of rapids extending for a mile and a half, which were even then considered dangerous; and Captain HANNAY remarks, that he had seldom seen in the worst season, and worst part of the *Ganges*, a stronger current, or more turbulent water than at the rapids of *Shuégyain-man*, a short distance above the village of *Namhet*.

On the arrival of the fleet at *Tshenbo*, which is about 10 miles below the mouth of the *Mogaung* river, the boats by which the party had been conveyed from *Ava* were exchanged for others of a smaller description, better adapted for the navigation of so small and tortuous a river as that of *Mogaung*. The one prepared for Captain HANNAY's accommodation was of the kind called by the Burmese "*loung*:" it was paddled by 25 men, and formed of a single tree, with the addition of a plank 10 inches broad, all round the upper part of it.

Before quitting *Tshenbo*, Captain HANNAY had a visit from the head priest, whose curiosity to obtain some knowledge of European customs and habits could only be satisfied by the display of the contents of his trunks, and the sight of his watch, sextant, and thermometer; all of which he was permitted to examine by Captain HANNAY, who regrets that he had not brought some missionary tracts with him from *Ava* "to give this inquisitive priest some idea of the Christian religion." *Tshenbo*, on the authority of this priest, is said to have been formerly a principal city of the Phwon tribe, who were dispossessed of it, about sixty years ago, by the Burmahs.

On the last day of December the mission reached the mouth of the *Mogaung* river, which Captain HANNAY ascertained by observation to be in latitude  $24^{\circ} 56' 53''$ . Here they were to quit the *Irawadi*, which, says Captain HANNAY "is still a fine river flowing in a reach from the eastward half a mile broad, at the rate of two miles an hour, and with a depth varying from three fathoms in the centre to two at the edge."

The *Mogaung* river on which the town of the same name is situated, is not more than 100 yards wide, and the navigation is impeded by a succession of rapids over which the stream rushes with considerable velocity. The smallest boat in the fleet was an hour and a half getting over the first of these obstacles, and the Shán boatmen, who are thoroughly acquainted with the character of the river, "pull their boats close to the rocky points, and then, using all their strength, shoot across to the opposite side before the force of the stream had time to throw them on the rocks." The Burmah boatmen adopted the apparently easier method of pulling their boats up along the edge of the stream, but this proved



both difficult and dangerous, one boat being upset and a man drowned. The banks of the river were covered with a dense and impervious jungle, which extended nearly the whole way to *Mogaung*, and no village served to beguile the wearisome monotony of this portion of the journey, until they reached *Akouktoung*, a small hamlet on the right bank inhabited by Phwons and Sháns. Here they met a chief of the *Laphae* Singphos, who had taken up his residence in this village with a few followers, in consequence of a feud with some neighbouring tribes in his own country to the north. Between *Akouk-yúa* and *Tapoh* (the next village seen) the bed of the river is filled with rocks and rapids, which render the navigation exceedingly dangerous, the stream shooting over them with such velocity as frequently to rise above the bow of the boat, which, in case of unskilful management, would be instantly upset. The way in which the Phwons and Sháns overcome these difficulties, formed a striking contrast to the conduct of the Burmah and Kathay boatmen. The former working together with life and spirit, still paid the strictest attention to the orders given by the head boatman; while the latter "who think," says Captain HANNAY, "that nothing can be done without noise, obey no one, as they all talk at once, and use the most abusive language to each other." He thinks the Phwons and Sháns greatly superior to the Burmahs or Kathays,—meaning by the latter those Manipurís resident in *Ava*, who are Burmans in every thing but origin.

After passing the last rapids at *Tapoh* the river expands in breadth to 200 yards; the stream flows with a gentle current, and "the bed is composed of round stones which are mostly quartz. Amongst them, however there are found massive pieces of pure crystal stone, partaking of the nature of talc, and also pieces of indurated clay of different colors. The banks are alluvial on the surface, but towards the base and near the edge of the river the soil becomes gravelly, and in some places has a stratum of beautiful bright yellow-colored clay intersecting it."

On the 5th of January the party disembarked from their boats, and as the Myo-wún was to be installed in his new government, the landing was effected with considerable state. "Arrangements," says Captain HANNAY, "had been made for our reception, and on first landing we entered a temporary house where some religious ceremony was performed, part of which was the Myo-wún supplicating the spirits of three brothers who are buried here, and who founded the Shán provinces of *Khanti*, *Assam*, and *Mogaung*, to preserve him from all evil. After which ceremony he dressed himself in his robe of state,

and he and I proceeded hand in hand through a street of Burman soldiers, who were posted from the landing place to the Myo-wún's house, a distance of nearly a mile : we were preceded by the Myo-wún's people carrying spears, gilt chattas, &c. and at intervals during our walk, a man in a very tolerable voice, chaunted our praises, and the cause of our coming to *Mogaung*. Several women also joined the procession, carrying offerings of flowers and giving us their good wishes."

The Myo-wún appears to have lost no time in availing himself of the advantages of his situation, for on the very day after landing, he commenced a system of unsparring taxation, to enable him to pay for his appointment. A rapid succession of governors within a very few years, all influenced by the same principle, had already reduced the inhabitants of *Mogaung* to a state closely bordering on extreme poverty, and the distress occasioned by the exactions now practised was bitterly complained of by the wretched victims of such heartless extortion. The Shán inhabitants of the town were employed by the Burmese officers to enforce this excessive payment of tribute from the Singphos and Kakhyens of the surrounding hills, which had led to much ill-will on the part of the latter, by whom they are stigmatised "as the dogs of the Burmans."

"The town of *Mogaung*," says Captain HANNAY, "is situated at the junction of the *Namyeeen* or *Namyang*, and the *Mogaung* or *Numkong* rivers, and extends about a mile from east to west along the bank of the last named river, the west end of the town being bounded by the *Namyeeen khyoung*, which comes from the district of *Monyeen* in a direction S. 43 W. The town of *Mogaung*, strictly speaking, is confined within what is now only the remains of a timber stockade. Outside of this, however, there are several houses, and within a short distance a few small villages are scattered about, but even including all these, there are not more than 300 houses. Those within the stockade are inhabited by Sháns, and those outside by Burmans, Phwons, Assamese and a few Chinese. The latter to the number of 50 reside here, and are under the authority of a Thoogyee of their own nation ;—they derive a profit from their countrymen who come annually in considerable numbers to purchase serpentine. Amongst them I saw both blacksmiths and carpenters, and, for the first time since leaving Gangetic India, I saw the operation performed of shoeing horses. The Sháns, inside the stockade, reside in large houses, such as I formerly described having seen amongst the Phwons ;—the Burmans and others live in the same description of

houses as are to be seen in every part of *Burmah proper*, but all bear signs of great poverty; and if it were not for the Chinese, whose quarter of the town looks business-like and comfortable, I should say that *Mogaung* is decidedly the poorest-looking town I have seen since leaving *Ava*. There is no regular bazar, all supplies being brought from a distance, and the market people are, with few exceptions, Kakhyens and Assamese from the neighbouring villages."

The arrival at so remote a spot of a European officer was soon bruited abroad, and Captain HANNAY's time was fully occupied in answering innumerable questions put to him by a crowd of visitors, who examined his sextant with great care, under the firm conviction that, by looking through it, he was enabled to perceive what was going on in distant countries;—nor would they believe that the card of his compass was not floating on water, until, to satisfy them, he had taken it to pieces. The paucity of inhabitants and poverty of the town plainly indicated the absence of extensive trade, and Captain HANNAY learnt, that, including the profits derived from the sale of serpentine, the revenues of the town and neighbouring villages did not amount to more than 30,000 rupees per annum, and the Burmah authorities can only enforce the payment of tribute from the Sháus of *Khanti*, and the Singphos of *Payendwen*, by the presence of an armed force. In their last attempt on the latter, a Burmah force of 1000 men was detached from *Mogaung*, of whom 900 were destroyed; and for ten years they had been held in salutary dread by the Burmah governors of the frontier. During his stay at *Mogaung*, Captain HANNAY obtained specimens of the green stone, called by the Burmah's *kyouk-tsein*, and by the Chinese *yueesh*\*, and which he supposes to be nephrite. "The Chinese," he says, "choose pieces which, although shewing a rough and dingy-colored exterior, have a considerable interior lustre, and very often contain spots and veins of a beautiful bright apple-green. These are carefully cut out, and made into ring stones, and other ornaments, which are worn as charms. The large masses are manufactured by them into bracelets, rings, and drinking cups, the latter being much in use amongst them, from the idea that the stone possesses medicinal virtues. All the

\* Monsieur ABEL RE'MUSAT, in the second part of his history of *Khotan*, is said by KLAPROTH (Mem. Rel. à l'Asié, tome 2, p. 299) to have entered into a very learned disquisition proving the identity of the *yu* or *yueesh* of the Chinese with the *jasper* of the ancients.—R. B. P.

The *yu* is a silicious mineral, colored with less intensity but passing into heliotrope. It is therefore *prase* rather than *jade* or nephrite.—ED.

*yueesh* taken away by the Chinese is brought from a spot five marches to the north-west of *Mogaung*, but it is found in several other parts of the country, although of an inferior quality. Serpentine and limestone are the prevailing formations of the base of the highest ranges of hills throughout this part of the country. Steatite is also abundant in the bed of the *Irawadi* below the valley of *Khanti*."

One very important object of Captain HANNAY'S mission was to cross the *Patkoi* mountains into *Assam*, and on his arrival at *Mogaung* he waited some days in considerable anxiety for the *Kakhyen* porters, who were to convey his baggage and supplies during the remaining portion of the journey:—he soon found, however, that the authority of the Burmans when unenforced by the presence of a large military detachment, was held in the most sovereign contempt by these hardy mountaineers, and after many fruitless attempts to induce the *Mogaung* woun to allow him to proceed with even a small party, he was constrained to limit his further researches to the *Hukong* valley and amber mines. Repeated remonstrances were necessary to induce the governor to proceed even so far, and it was not until the 19th of the month that an advanced guard crossed the river, and fired a feu de joie, after performing the ceremony of sacrificing a buffaloe to the *Nhatgyee* (or spirits of the three brother *Tsaubuas* of *Mogaung*), without which no expedition ever marches from the town. Even then, the dogged obstinacy of the governor induced him to delay his departure, and it was not until Captain HANNAY threatened that he would instantly return to *Ava* if there were any longer delay, that the wily diplomatist could be induced to move.

On the 22nd they crossed the river, and the camp was formed on the northern bank, in strict accordance with Burmese custom. Captain HANNAY'S tent (a common sepoy's pál) was the admiration of every one but its owner, who now for the first time marched with an undisciplined rabble. "The soldiers' huts," says Capt. HANNAY, "are composed of branches of trees and grass, and if they wish to be particular, they cover them with a piece of cloth, which is generally some old article of dress. The *Myo-wún's* station is in the centre of the camp, and in front of him are his own immediate followers, whose huts are formed into a street marked by a double line of spears. At the head of this street the flags are placed, and also the two small cannons (one-pounders), which are sent with the force, I believe, for the purpose of firing three rounds morning and evening, to frighten the neighbouring *Kakhyens*, and which ceremony, I suspect, will be gone through with as much gravity, as if it would have the desired



effect. My position is in front and a little to the left of the Myo-wún, and we are completely surrounded by the soldiers, whose huts are in distinct lines, the men of each district keeping together."

On the 22nd they at length set out, and the style of march was as little in accordance with the military experience of our traveller, as the previous encampment. "The men, to the number of 800, march in single file, and each man occupies a space of six feet, being obliged to carry a bangy containing his provisions, cooking pots, &c. besides his musket, which is tied to the bangy stick. This is the most common mode of marching, but some of them carry their provisions in baskets, which they strap across their forehead and shoulders, leaving their hands free to *carry* their muskets; but as to *using* them it is out of the question, and I should say the whole party are quite at the mercy of any tribe who choose to make a sudden attack upon them." On reaching the encamping ground, however, these men gave proof how well they were adapted to this mode of travelling, for in an hour after their arrival, every individual had constructed a comfortable hut for himself, and was busily engaged cooking the rice, which, with the addition of a few leaves plucked from certain shrubs in the jungle, forms the diet of the Burman soldier on the line of march.

The tract of country through which the party passed on the first two days was hilly, and abounded in a variety of fine forest trees; but on approaching *Numpoung*, the second encampment, the country became more open, and the pathway led through a forest of very fine teak trees. The principal rivers all flowed from the *Shuédoug-gyi* range of hills on the east of their route, and are at this season of the year mere mountain torrents, with so little water in them, that the path frequently passes over their rocky beds. The whole route from *Mogaung* to the *Húkong* valley, may be described generally as passing between defiles, bounded by the inferior spurs of the *Shuédoug-gyi* range on the east, and numerous irregular hills on the west; these defiles form the natural channels of numerous streams, which, flowing from the heights above, and struggling amidst masses and boulders of detached rock, make their way eventually to the larger stream of the *Numkong*, which unites with the *Namyen* at *Mogaung*. The only traces of inhabitants perceptible in the greater part of this route were a few cleared spots on the hills in the vicinity of some scattered Kakhyen villages, and a few fishing stakes in the mountain streams. Near the mouth of the *Numsing Khyoung* the party met with a few Kakhyen huts, which appear to

have been constructed by that tribe, during their fishing excursions; and at *Tsadozout*, an island in the bed of the *Mogaung* river, on which the force encamped on the 28th of January, they passed the sites of two Kakhyen villages, and found the ground completely strewn with graves for a considerable distance, the probable result of some endemic disease which induced the survivors to desert the spot. The finest lemon and citron trees, Captain HANNAY had ever seen, were found here, and the tea plant was also very plentiful—the leaf is large, and resembles that sold in *Ava* as pickled tea; the soil in which it grew most luxuriantly is described as of a “reddish-colored clay.” Thus far, a considerable portion of the route had passed either directly over the bed of the *Mogaung* river or along its banks; but at *Tsadozout*, they crossed it for the last time, and at this spot it is described as a mere hill stream with a “bed composed of rolled pieces of sienite and serpentine, with scales of mica in it.” The navigation of the river even for small canoes ceases below this spot, and those which had accompanied the party with supplies were left, from inability, to convey them further.

About four miles north of *Tsadozout* “the road ascends about 100 feet, and passes over a hilly tract, which seems to run across from the hills on the east to those on the west, and is called by the natives *Tsambú-toung*, (the *Mount Samú* of the maps.) This transverse ridge evidently forms the southern limit of the *Húkong* valley, and streams flow from it both to the north and south; the former making their way to the *Khyendwen*, and the latter to the *Mogaung* river.

“*Tsambú-toung*,” says Captain HANNAY, “is covered with noble trees, many of which, I think, are *sál*, and are of immense height and circumference. The tea-plant is also plentiful, besides a great variety of shrubs which are quite new to me. The rays of the sun seem never to penetrate to the soil of *Tsambú-toung*; it may therefore be easily imagined how damp and disagreeable it is, more particularly as there is a peculiar and offensive smell from a poisonous plant which grows in great abundance in this jungle, and the natives tell me that cattle die almost immediately after eating it.”

On the 30th the party descended from the encampment on the northern face of this ridge, to the Singpho village of *Walobhúm*, and finally encamped on the left bank of the *Edíkhyoung*, about three furlongs distant from *Meinkhwon* or *Múngkhúm*, the capital of the *Húkong* valley, “where,” says Captain HANNAY, “our journey must end for the present; as, besides having no provisions, the men composing the force are so completely worn out with fatigue, that I

am certain they could not proceed further without a halt of some days." This interval Captain HANNAY assiduously employed in collecting information regarding the valley, which had from a very early period been an object of great geographical interest, as the site of the *Payendwen* or amber mines, and at no very remote era probably formed the bed of an alpine lake, which, like that of the *Manipur* valley, has been subsequently raised to its present level by long continued alluvial deposits, and detritus, from the hills which encircle it on every side. The tendency of every such deposition is to raise the level of the water, and facilitate its drainage, until it becomes so shallow, that evaporation suffices to complete the process, and render the soil a fit abode for future races of men. The numerous and extensive lakes in the mountainous regions of *Thibet* and *Tartary* are doubtless undergoing a similar change, and no great stretch of imagination is necessary to anticipate the period when they will become the sites of extensive towns and villages, and present a striking contrast to the rugged magnificence and solitary grandeur of the snowy regions which surround them.

"The valley of *Hákong* or *Payendwen*," says Captain HANNAY, "is an extensive plain, bounded on all sides by hills; its extent from east to north-west being at least 50 miles, and varying in breadth from 45 to 15 miles, the broadest part being to the east. The hills bounding the valley to the east are a continuation of the *Shuédoug-gyí* range, which is high, commences at *Mogaung*, and seems to run in a direction of N. 15 E." The principal river of the valley is the *Numtunae* or *Khyendwen*, which flows from the *Shuédoug-gyí* range, and after receiving the contributions of numerous small streams quits the valley at its north-western corner, and again enters the defiles of the hills, beyond which its course is no longer perceptible. On the western side of the valley there are but few villages, and these thinly inhabited, the capital itself containing not more than thirty houses; but the north and eastern sides are said to be very populous, the houses in those quarters being estimated at not less than 3000, nearly all of which are situated on the banks of the *Towang* and *Debee* rivers. All the low hills stretching from the western foot of the *Shuédoug* range were under cultivation, and the population is said to extend across to the banks of the *Irawadí*, in numbers sufficient to enable the Singphos when necessary to assemble a force of nine or ten thousand men.

"With the exception," says Captain HANNAY, "of the village of *Meinkhwon*, which has a Shán population, the whole of the inhabitants of the valley are Singphos and their Assamese slaves. Of the



former, the larger proportion is composed of the Mrip and Tisan tribes, with a few of the Laphai clan, who are still regarded as strangers by the more ancient colonists, and can hardly be viewed but with hostile feelings, as this tribe have frequently ravaged *Meinkhwon* within the last six years, and were guilty of the still greater atrocity of burning a priest alive in his *kyoung* or monastery.

Formerly, the population was entirely Shán, and previous to the invasion of *Assam* by the Burmese, the town of *Meinkhwon* contained 1500 houses, and was governed by the chief of *Mogaung*. From that period, the exactions of the Burmese officers have led to extensive emigration, and to avoid the oppression to which they were hourly exposed, the Sháns have sought an asylum in the remote glens and valleys on the banks of the *Khyendwen*, and the Singphos among the recesses of the mountains at the eastern extremity of the valley. This state of affairs has led to general anarchy, and feuds are constantly arising between the different tribes, which the quarrel of the Beesa and Dupha Gaums has greatly contributed to exasperate. No circumstance is more likely to check these feuds, and reclaim the scattered population of the valley, than the establishment of a profitable commercial intercourse with the more equitably governed valley of *Assam*, with which communication is now becoming more intimate than at any previous period.

Of the mineral productions of the *Húkong* valley, enumerated by Captain HANNAY, the principal are salt, gold, and amber: the former, he informs us, is procured "both on the north and south sides of the valley, and the waters of the *Namtwonkok* and *Eđi* rivers are quite brackish from the numerous salt springs in their beds.—Gold is found in most of the rivers, both in grains and in pieces the size of a large pea. The rivers which produce it in greatest quantity and of the best quality are the *Kapdúp* and the *Namkwán*: the sand of the former is not worked for this mineral, I am told, but large pits are dug on its banks, where the gold is found, as above mentioned. Besides the amber, which is found in the Payen-toung, or amber mine hills, there is another place on the east side of the valley called *Kotah-bhám*, where it exists in great quantities, but I am informed that the spot is considered sacred by the Singphos, who will not allow the amber to be taken away, although it is of an inferior description." Specimens of coal, were also found by Captain HANNAY in the beds of the *Nambhyú* and *Eđi* rivers; and he learnt from the natives that, in the *Nuntarong*, a great quantity of fossil wood was procurable.

In its relation to *Assam* and *China*, the trade of the *Hükong* valley naturally attracted a share of Captain HANNAY's attention, and from his account it appears that "the only traffic of any consequence carried on in this valley is with the amber, which the Singphos sell to a few Chinese, Chinese-Sháns, and Chinese Singphos, who find their way here annually. The price of the common or mixed amber is  $2\frac{1}{2}$  ticals a vis or four rupees per óne and a half seer: but the best kind and what is fit for ornaments, is expensive, varying in price according to its color and transparency\*."

"The Chinese sometimes pay in silver for the amber, but they also bring with them warm jackets, carpets, straw hats, copper pots, and opium, which they give in exchange for it. They also barter their merchandize for ivory and gold dust, but only in small quantities. A few individuals from the Burman territories likewise come here, with cloths of their own manufacture, and also a small quantity of British piece goods for sale. But as they are obliged on their way hither to pass through the country of the most uncivilized of the Kakhyen tribes, they seldom venture to come. The greatest part therefore of British and Burman manufactures which are used in this valley, are brought from *Mogaung* by Singpho merchants. But I understand that within the last few years, several of them have gone to *Assam* with gold dust, ivory, and a little silver, for which they receive in return muskets, cloths, spirits, and opium. The following is a list of British piece goods now selling at *Meinkhwon*—common book-muslin used as head dresses, 14 rupees a piece; coarse broad cloth worn as shawls,  $2\frac{1}{2}$  yards long, 18 rupees each; good cotton handkerchiefs, 4 rupees a pair; and coarse ones,  $2\frac{1}{2}$  rupees a pair. These are the prices of goods bought at *Ava*, but what similar articles from *Assam* may cost, I cannot ascertain. The broad cloth, however, that I have seen from the latter place is of a very superior quality. The merchants who come to this valley from the Burman territories are natives of *Yo*, and the man who is now selling goods here has frequently visited *Calcutta*. The dress worn by the *Singphos* of this valley is similar to that of the Sháns and Burmans of *Mogaung*, but they frequently wear jackets of red camlet, or different velvets which they ornament with buttons, and those who can afford it wear a broad-cloth shawl. The arms in common use amongst them are the *dhú* (or short sword) and spear. The women wear neat jackets of dark coarse cotton cloth, and their *thamines* or petticoats are full and fastened round the waist with a band, being altogether a much more modest dress than that worn by the

\* Specimens in matrice are deposited in the Society's Museum.—ED.

Burman women. Those who are married, wear their hair tied on the crown of the head like the men, but the younger ones wear theirs tied close to the back of the neck, and fastened with silver pins—both married and single wear white muslin turbans. The ornaments generally worn by them are amber ear-rings, silver bracelets, and necklaces of beads, a good deal resembling coral, but of a yellowish color, and these are so much prized by them that they sell here for their weight in gold.”

During his stay at *Húkong*, Captain HANNAY was visited by many Singphos from the borders of *China*, from whom he learnt that the *Sginmaekha* river rises in the mountains bounding the plain of *Khanti* to the north, and is inclosed on the east by the *Goulang-sigong* mountains, which they consider the boundary between *Burmah* and *China*. This river is, on the same authority, pronounced not to be navigable even for canoes, and the most satisfactory confirmation is afforded of the accounts of Captain WILCOX\*. Several smaller streams fall into the *Sginmaekha* from the *Shuédoug-gyí* hills on the west, and the name of *Sitúng* is given to the tract of country through which they flow. In this district gold is very plentiful, and it is found, says Captain HANNAY, “over the whole tract of mountainous country, above the *Sginmaekha*. The Chinese visit this locality for the purpose of procuring the gold, and give in exchange for it, warm clothing, carpets and opium.”

Of the several routes by which communication is kept up between the inhabitants of *Húkong* and the countries around, the principal appear to be, one leading across the *Shuédoug-gyí* range to the eastern Singphos; a second, called the *Lye-gnep-bhúm* road, winds round the base of the mountain of that name, and leads in sixteen days to *Múnglang*, the capital of the *Khanti* country, which was visited by Captain WILCOX.

The most important one, however, with reference to trade, lies in a south-east direction from the *Húkong* valley, from which the district of *Kakyo-wainmo* is not more than eight days' march distant. By this route the Chinese frequently travel, and it affords a very satisfactory proof that intercourse may be held direct with *China*, without the necessity of following the circuitous route by *Mogaung*.

\* Although Captain WILCOX (*As. Res.* vol. xvii. p. 463), relying on the accounts given by Singphos of this river, appears to have formed rather an exaggerated estimate of *its size*, his conjectures as to the position of *its sources* are fully verified by the statements made to Captain HANNAY.—R. B. P.

Among the several races of people inhabiting the valleys through which the principal rivers flow, the Khantis or Khumptis hold a very conspicuous rank: they are represented as a fine, brave, and hardy race of men, and are held in great apprehension by the Burmahs, who, about three years ago, attempted to raise revenue amongst them: the force detached on this duty, however, met with such determined resistance, that it was compelled to return, and no subsequent attempt has been made on their independence. They are in constant communication with the Khunúngs, a wild tribe inhabiting the mountains to the north and east, from whom they procure silver and iron. "The former is found in a mine, said to be situated on the northern side of the mountains, to the north-east of *Khanti*." All the information Captain HANNAY could obtain led him to suppose that this mine was worked by people subject to *China*, and from the description given, he thinks they are Lamas, or people of *Thibet*. The part of the Chinese territories north-east of *Khanti* is known at *Húkong* by the name of *Múngfan*\*, and the Khantis have no communication with it but through the Khunúngs.

From *Meingkhwon*, Captain HANNAY obtained a view of the hill, near which lie the sources of the *Urú* river, one of the principal affluents of the *Ningthí* or *Khyendwen*: it bore south  $35^{\circ}$  west from *Meingkhwon*, and was about 25 miles distant. It is in the vicinity of this spot that the most celebrated mines of serpentine are situated, and their position is thus described by Captain HANNAY.

"A line drawn from *Mogaung* in a direction of N. 55 W. and another from *Meingkhwon* N. 25 W. will give the position of the serpentine mine district. The Chinese frequently proceed to the mines by water for two days' journey up the *Mogaung* river, to a village called *Kammein*, at which place a small stream called *Engdau-khyoung*, falls into the *Mogaung* river. From thence a road leads along the *Engdau-khyoung* to a lake several miles in circumference called *Engdau-gyí*, and to the north of this lake eight or nine miles distant are the serpentine mines. The tract of country in which the serpentine is found extending 18 or 20 miles." There is, however, another more direct

\* In the second volume of DU HALDE'S "China," p. 385, the Pèrè Regis thus describes the tribe by which this tract of country is inhabited, and its geographical site:

"The most powerful among the Tartar Lamas are those called by the Chinese *Moongfan*, who possess a wide territory in *Tibet*, north of *Li Kyang-lá-fú*, between the rivers *Kincha-kyang* and *Vu-lyangho*. This country was ceded to them by USANGHEY (whom the Manchews made king of *Yunan*) to engage them in his interest."—R. B. P.



route from *Kam-mien* which runs in a north-westerly direction. The whole tract of country is hilly, and several hot and salt springs are reported to exist near the *Engdau-gyi* lake, which is said to cover what was once the site of a large Shán town called *Tumansye*. The natives affirm that it was destroyed by an earthquake, and from the description given of a hill in the vicinity, the catastrophe may have been produced by the immediate agency of volcanic action.

On the 21st of March, Captain HANNAY visited the amber mines, and his description is the first that has ever been given of the locality from whence the Burmans obtain this mineral.

"We set out at 8 o'clock," he says, "in the morning, and returned at 2 P. M. To the foot of the hills the direction is about south 25 west, and the distance three miles, the last mile being through a thick grass jungle, after which there is an ascent of one hundred feet, where there is a sort of temple, at which the natives, on visiting the mines, make offerings to the ngats or spirits. About a hundred yards from this place, the marks of pits, where amber had been formerly dug for, are visible, but this side of the hill is now deserted, and we proceeded three miles further on to the place where the people are now employed in digging, and where the amber is most plentiful. The last three miles of our road led through a dense small tree jungle, and the pits and holes were so numerous that it was with difficulty we got on. The whole tract is a succession of small hillocks, the highest of which rise abruptly to the height of fifty feet, and amongst various shrubs which cover these hillocks the tea plant is very plentiful. The soil throughout is a reddish and yellow colored clay, and the earth in those pits, which had been for sometime exposed to the air, had a smell of coal tar; whilst in those which had been recently opened, the soil had a fine aromatic smell. The pits vary from six to fifteen feet in depth, being, generally speaking, three feet square, and the soil is so stiff that it does not require propping up."

"I have no doubt," Captain HANNAY adds, "that my being accompanied by several Burmese officers, caused the people to secrete all the good amber they had found. For although they were at work in ten pits, I did not see a piece of amber worth having. The people employed in digging were a few Singphos from the borders of *China* and of this valley. On making inquiry regarding the cause of the alleged scarcity of amber, I was told that want of people to dig for it was the principal cause; but I should think the inefficiency of the tools they use was the most plausible reason:—their only implements being a bambú sharpened at one end, and a small wooden shovel."

“The most favorable spots for digging are on such spaces on the sides of the small hillocks as are free from jungle, and I am told that the deeper the pits are dug, the finer the amber; and that that kind which is of a bright pale yellow, is only got at the depth of forty feet under ground.”

A few days subsequent to this examination of the amber mines, Captain HANNAY visited the *Numtunae* or *Khyendwen*, which flows through the valley about five miles north of *Meingkhwon* in this part of its course; and at this season of the year the stream, as might have been anticipated, is small, but in the rains Captain HANNAY estimates that its breadth must be 300 yards from bank to bank, and it is navigable throughout the year for large canoes. An island in the centre of the bed was covered with the skeletons of large fish, which had been destroyed by the poisonous quality of the fallen leaves of overhanging trees:—the natives eat the fish so killed with impunity.

After waiting several days at *Meingkhwon*, in anticipation of the return of some messengers who had been sent into *Assam*, and suffering extreme inconvenience from the difficulty of procuring adequate supplies for the force, the Myo-wún began seriously to think of returning to *Mogaung*. All expectation of prosecuting the journey into *Assam* had been relinquished, and the Dupha Gaum having voluntarily come into the camp, was received by the Burman governor with a civility and distinction, extorted by his apprehension of the numerous Singphos ready to support their redoubtable chieftain, whose influence is said to extend to the frontiers of *China*. On the first of April the ceremony was performed of swearing in the different Tso-buas (tributary chiefs) to keep the peace, which is thus described by Captain HANNAY.

“The ceremony commenced by killing a buffaloe, which was effected with several strokes of a mallet, and the flesh of the animal was cut up to be cooked for the occasion. Each Tso-bua then presented his sword and spear to the spirits of the three brother Tso-buas of *Mogaung*, who are supposed to accompany the governor of the above named place, and to inhabit three small huts which are erected on the edge of the camp. Offerings of rice, meat, &c. were made to these *ngats* or spirits, and on this being done, each person concerned in taking the oath received a small portion of rice in his hand; and in a kneeling posture, with his hands clasped above his head, heard the oaths read both in the Shán and Burmese languages. After this, the paper on which the oaths were written was burned to ashes, and mixed with water, when a cup full of the mixture was given to each of the Tso-buas

to drink, who, before doing so, repeated an assurance that they would keep the oath, and the ceremony was concluded by the chiefs all sitting down together and eating out of the same dish." The chieftains to whom this oath of forbearance was administered were the Thogyee of *Meingkhwon*, a Shán—the Dupha Gaum, a *Tesan* Singpho—the Panwah Tsobuá, a *Laphae* Singpho—the Sitúngyen Gaum, and Weng-keng-moung, *Mirip* Singphos—and Tare-poung-noung, a *Tesan* Singpho,—all of whom, by this act, virtually acknowledged the supremacy of the Burman authorities, and their own subjection to the kingdom of *Ava*.

The new governor having succeeded by threats and the practice of every art of extortion, in raising as large a sum as it was possible to collect from the inhabitants of the valley and surrounding hills, announced his intention of returning to *Mogaung*; and on the 5th of April no intelligence having been received from *Assam*, Captain HANNAY left *Meingkhwon* on his return to *Ava*, with a very favorable impression of the Singphos he had seen, who appear to possess great capabilities of improvement, and whose worst qualities are represented as the natural result of the oppressive system of government under which they live. One of their chieftains in conversation with Captain HANNAY furnished a clue to the estimation in which they held the paramount authorities around them by the following remark. "The British," he said, "are honourable, and so are the Chinese. Among the Burmans you might possibly find one in a hundred, who, if well paid, would do justice to those under him. The Sháns of *Mogaung*," he added "are the dogs of the Burmans, and the Assamese are worse than either, being the most dangerous hack-biting race in existence."

On the 12th of April, Captain HANNAY reached *Mogaung*, and some boats arriving shortly afterwards from the serpentine mines, he availed himself of so favorable an opportunity of acquiring some additional information regarding that interesting locality. He found the boats laden with masses of the stone so large, as to require three men to lift them. The owners of the boats were respectable Chinese Musalmáns, who were extremely civil, and readily answered all the questions put to them by Captain HANNAY, who learnt "that, although the greater number of Chinese come by the route of *Santa* and *Tali*, still they are only the poorer classes who do so: the wealthier people come by *Bamo*, which is both the safest and the best route. The total number of Chinese and Chinese Sháns who have this year visited the mines is 480."



“ I have made every inquiry,” adds Captain HANNAY, “ regarding the duties levied on these people, both on their arrival here and on their purchasing the serpentine, and I am inclined to think that there is not much regularity in the taxes, a great deal depending on the value of the presents made to the head-man. Formerly, the Chinese were not allowed to go to the mines, but I understand the following is now the system carried on in this business.

“ At particular seasons of the year, there are about 1000 men employed in digging for serpentine: they are Burmahs, Sháns, Chinese-Sháns, and Singphos. These people each pay a quarter of a tical a month, for being allowed to dig at the mines, and the produce of their labour is considered their own.

“ The Chinese who come for the serpentine, on their arrival at *Mogaung*, each pay a tax of from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  ticals of silver, for permission to proceed to the mines, and  $1\frac{1}{2}$  ticals a month during their stay there. Another duty is levied on the boats or ponies employed in carrying away the Serpentine, but this tax varies according to circumstances; and on the return of the Chinese to *Mogaung*, the serpentine is appraised and a tax of 10 per cent. taken on its value. The last duty levied is a quarter of a tical from every individual, on his arrival at the village of *Tapo*, and there the Chinese deliver up all the certificates they have had, granting them permission to proceed to the mines.”

On the 9th of April, no intelligence having been received of the messengers sent into *Assam*, Captain HANNAY determined to return to *Ava*, and, embarking on a small boat, he reached *Bamo* in eight days, and arrived at *Ava* on the 1st of May. The time occupied in returning from *Meingkhwon* to *Ava* was only eighteen days, while the journey to that frontier post was not completed in less than forty-six of actual travelling,—a very striking proof of the extreme difficulty of estimating the distance between remote points, by the number of days occupied in passing from one to the other, unless the circumstances under which the journey was made are particularly described. That portion of the route between *Meingkhwon* and *Beesa* in *Assam*, which Captain HANNAY was prevented visiting, will probably in a short time be as well known as the territory he has already so successfully explored, and the researches in which he is now engaged, extending from *Beesa* in *Assam* to *Meingkhwon* in the *Húkong* valley, will complete the examination of a line of country not surpassed in interest by any, which our existing relations with the empire of *Ava* have afforded us an opportunity of visiting. His labours have

filled the void necessarily left in the researches of WILCOX, BURLTON, and BEDFORD, and have greatly contributed to dispel the doubt and uncertainty, which they had not the opportunity of removing. While the officers of the *Bengal* Presidency have been thus successfully engaged in geographical inquiries on the north of *Ava*, the south and western districts have been explored with equal zeal and intelligence by those of the *Madras* Presidency; and the spirit of honorable competition, which has already stimulated the researches of Drs. RICHARDSON and BAYFIELD, and Lieutenant MACLEOD, with such marked advantage, bids fair, in a comparatively short time, to render the whole empire of *Ava* better known than the most sanguine could have ventured to anticipate. Did the results of such journies and investigations tend only to an increase of our geographical knowledge, they would even then be most valuable: but to suppose that the consequences of this intercourse between intelligence and ignorance are so limited, is to take a most inadequate view of the subject: the confidence inspired by the visits and conduct of a single individual\*, has already opened a communication between *Yunan* and *Maulmein*, and the caravans of *China* have commenced their annual visits to the British settlements on the coast: the journey of Captain HANNAY will in all probability lead to a similar result between *Assam* and the northern districts of *Yunan*; and the time may not be very distant, when British merchants located at *Bamo*, will, by their superior energy and resources, extend its now restricted trade to surrounding countries, and pave the way for ameliorating the condition and enlightening the ignorance of their numerous inhabitants.

II.—*Facsimiles of Ancient Inscriptions.* By JAS. PRINSEP, *Sec. &c.*

[Continued from page 223.]

The subject selected for this month's illustration is a slab of dark stone, marked No. 6 in the Society's museum. Nothing is there recorded of its origin; but the character in which it is cut, (as may be seen by the lithographed specimen in Pl. XVII.) is the same as that published in February (Pl. VII) from a similar stone of a somewhat smaller size; and which publication has led, in rather a singular manner, to the discovery of the source whence both were derived.

Lieut. KITTOE, as I have before mentioned, was lately requested on the part of the Society to re-examine the inscription on the *Khandgiri*

\* Dr. RICHARDSON of *Madras*.—R. B. P.

rock, published in STIRLING'S memoir on *Cuttack* (As. Res. XV.) In doing this, he came most unexpectedly upon a number of highly curious ancient temples and inscriptions, of which he hastened to make drawings and facsimiles. He found himself impeded and foiled by the bráhmans of the spot, who even went so far as to abstract one of the copies which had cost him the most labour. Upon seeking the cause of so unusual a want of courtesy, the priests told him how their images and relics had been carried off by former antiquaries, and pointed out whence the commemorative slab had been actually cut out from the temples of *Ananda Básu deva* at *Bhubaneswar* by a late *Colonel Sahib*. The dimensions of the slab and the subject of invocation tallied so exactly with the inscription translated by Captain MARSHALL, that Lieut. KITTOE wrote to me on the subject, and on referring to the list of donations at the end of the eleventh volume of *Researches*, I find General STEWART set down as the donor of "two slabs with inscriptions from *Bhubaneswar* in *Orissa*."

There was nothing in the first of the two whence we could guess its locality; the person noted as the founder of the temple being a private individual, named BHATTA SRI' BHAVA-DEVA; but in the slab, now confidently conjectured to be its companion, we have a rája's name and ancestry which ought to afford a better clue.

This king appears in the 15th verse as ANIYANKA BHIMA, the brother of "an excellent man" who had come to the throne through marriage with SURAMA', the daughter of AHIRAMA, whose parentage is nameless, and recorded only as "the ornament of their race."

On referring to STIRLING'S catalogue of the princes of *Orissa*\*, we find this very person, under the name of ANANGA BHIM DEO, ascending the *Gajapati* throne, out of the direct line, in 1174 A. D. He was one of the most illustrious princes of the *Gangavansa* line, the FIROZ of his day, for the number and variety of the public works he erected. "Having unfortunately incurred the guilt of killing a bráhman, motives of superstition prompted him to construct numerous temples as an expiation for his offence;" and probably this of *Bhubaneswara* was one of them. The date of rája ANANGA BHIMA also agrees closely with what was assumed from the style of the alphabet, and the "Samvat 32" of the *Basu-deva* slab. It will hence become a question, whether these figures are, in all cases, to be referred to a *Cuttack* era, or whether the same Deva-Nágari alphabet was in use

\* See Useful Tables, page 113; or As. Res. XV. 269.

from *Shekavati*\* to Benares, Dinajpur, and Orissa, in the 12th century, while each prince had then an era of his own.

The writer, UDAYANA, whose poetic style is more than usually florid and inflated, is, I am told by the pandits, an author of a work on logic entitled the कुसुमाञ्जलि *kusamāñjali*, which is in much repute in the schools. We have a copy in the Society's library.

I am once more indebted to the Reverend Mr. YATES for undertaking the translation of this very lengthy document. It was previously transcribed without difficulty by the Society's pandit. The only letter which was remarked as unusual in form, is the इ of इति, at the end of the fourth line of the lithograph. It bears a strong resemblance to the corresponding letter of the *Amarāvati* and more southern alphabets.

I cannot conclude these preliminary remarks without animadverting upon the ruthless spoliation which is often carried on by soidisant antiquaries, to the direct perversion of the true object of research—the preservation of ancient monuments, and their employment to elucidate the history of the country. The facts told by these two *Bhubaneswara* stones were utterly unintelligible, until accident pointed out whence they had come—and the local history of the temples was or would have been equally lost in another generation. It is to be hoped therefore that the Asiatic Society will hasten to restore them to their former positions. Such an act will contribute tenfold to the true objects of our institution by the confidence it will inspire in the minds of the people who now watch our explorers with jealousy, and withhold valuable information, lest it should only yield to fresh acts of plunder and demolition†.

*Transcript in modern Deva-Nāgarī.*

नमः शिवाय । विद्युत्पिङ्गलभाललोचनशिखिज्वालामलत्सामृत  
स्नातःस्पर्शनजीविताः श्रवणिरःश्रेणीः शिवे नृत्यति । एको राजरनेकता-  
ङ्गत इति त्रासादिव प्रक्ष्य ताञ्चन्द्रः सान्द्रजटाटवीसुरसरिदुर्गाश्रितः  
पातु वः ॥ १ ॥

\* See the *Harsha* inscription, in nearly the same character, Vol. IV. 361.

† Since writing the above, I am happy to perceive that the Society has determined on the immediate restitution of the two slabs through Lieut. KIRROE, who has been requested to explain that their removal was the act of an individual, and would never have had their sanction, unless they had been assured that the objects were going to decay, or held in no estimation where they were.









कोऽयं ललाटतटनेत्रपुटस्य गर्वात्खर्वीकरोति जगदित्यभिधाय  
श्रमैः । यः साभ्यसूयमकरोच्चरणेऽद्विलक्ष्मीं जीयात्स गौतममुनि  
र्मुनिवृन्दवन्द्यः ॥ २ ॥

तद्गोत्रे राजपुत्रः समजनिजगतीमखनः पण्डितानां मान्यः पुण्यैक-  
धाम प्रतिबलजलधिचोभमश्याचलश्रीः । श्रीमान् सत्कीर्त्तिवल्लीवलयि-  
तवसुधामण्डलश्चण्डरश्मिस्फूर्ज्जत्तेजोभिरुग्रग्लपितरिपुयशःकैरवोद्वार  
देवः ॥ ३ ॥

समजनि निजवंशोत्तंसलक्ष्मीरलक्ष्मीकृतनिखिलविरोधिस्फूर्ज्जदम्भोधि  
रस्मात् । दलितललितमल्लीकीर्त्तिवल्लीवितानप्रख्यतद्वसितचन्द्रो मूलदेवः  
कृतोन्नः ॥ ४ ॥

तस्मात् पुण्यैकराशेरभवदहिरमो नाम धाम स्तुतीनामारामः साम  
नीतेरपरिमितयशःपूरचन्द्रोदयाद्रिः । यस्योद्यद्दानधर्मात्सवजनित  
महोत्साहकाले त्रिलोकप्रासादाग्ने स्फुरन्ति स्फुरदमलयशोवैजय-  
न्त्यो जयन्त्यः ॥ ५ ॥

तस्मान्नैकसुताद्भवतुरपान्नाथादिवेन्दुश्रियै श्रीस्वप्नेश्वरनाम नाम  
सुरमादेवी च सार्थाङ्गया । एकः क्षातलमखनाय सकलाधारस्तथा-  
न्याजगतदारिद्रज्वरनाशनाय जगतीचिन्तामणिश्रीरभूत् ॥ ६ ॥

नतन्वपतिकिरीटकोटिरत्नद्युतिपदपीठश्यालुपादपद्मः । अजनि  
रजनिजानिवंशचूडामणिरणिमादिगुणेन चोत्तमः ॥ ७ ॥

यात्रावाजिखुरप्रहारविसरङ्गुलीसमुद्रे स्फुरत्तेजोभास्करमण्डल  
क्षितिभुजामस्तङ्गते निर्वभरं । यं संग्रामगृहोदरेषु विजयश्रीः सार्द्धं  
माशासखीवृन्दैर्भिन्नगजेन्द्रमौक्तिकवती भूयोऽभिसर्त्तुं गता ॥ ८ ॥

रेवालाः कुलवृद्ध किन्नु भवतां दुर्भिक्षमायास्यति स्फोतं किं सतु स-  
त्रदः पलभुजां स्वर्गाय सन्नह्यते । यस्येति श्रुतिमाकलयथ समरे निर्भिन्न  
वीरद्विषाम्बह्वरैः परिपूरयन्ति परितः प्रेताः कुश्रूलोत्करान् ॥ ९ ॥

तस्मिन् पुरन्दरपुरीतिलकायमाने दाने ससुन्नतमतिस्नयस्तदीयः ।

साम्राज्यभारवहनेकधुरीणबाजः श्रीराजराजन्धपतिः पृथिवीं प्रशास  
॥ १० ॥

यस्योद्यदाजिराजीखुरश्रिखरभरद्वृक्षभूचक्रसर्प्यङ्गुलीजालावकीर्ण  
त्रिदशपुरसरिङ्गुरिपङ्के विलम्बं । नीरकीङ्गानिमज्जत्पुरपतिकरिणं  
व्याकुलाः प्रकभृत्या धृत्वा लाङ्गूलमेकी करतलमपरे तीरसुत्तोल-  
यन्ति ॥ ११ ॥

रणभुवि यदि नित्यन्नाहतः प्रत्रुसार्थस्तुलितहरिभुजेन क्षामुजाऽने  
न नूनं । कथमिह कलिकाले कल्पितानल्पपापप्रणयिनि सुरस्थिः  
स्रष्टुरस्यान्दिवि स्यात् ॥ १२ ॥

येनोऽप्यपुरुषोत्तमेन सुरमादेवी रमैवार्थतो नाम्नाऽन्तःपुरसुन्दरी  
जनशिरोरत्नाङ्कुरश्रियं । प्रत्यारुह्य तुलाः प्रियेण सहसा यत्स्वर्णं  
शैलान्ददावेतैः स्फीततराधरार्थिभिरहो जातार्थिनी केवजं ॥ १३ ॥

सर्वं नरेन्द्रतिलकः कलिकालकल्पशाखासुखौघमनुभूय चिरं  
स राजा । वृद्धोऽनुजं मनुजराजनतांघ्रियुग्मं राज्येऽभिघक्तमकरो-  
दनियङ्कभीमं ॥ १४ ॥

स श्रीमाननियङ्कभीमन्धपतिः साम्राज्यलक्ष्मीपतिः प्रत्यर्धिच्छिति-  
पालमौलितिलकस्थक्तारिकान्तालकः । सम्प्राप्यैव समुद्रमुद्रितमहीचक्रं  
कराग्रस्फुरच्चक्रं प्रकपराक्रमः समकरोद्वाजं नृचन्द्रः क्षणात् ॥ १५ ॥

हे भोगीन्द्र किमात्य कुर्म धरणीभारः स तुच्छो महान् जानासि  
त्रिकलिङ्गनाथयशसा ख्यातं न जाने ष्टणु । देवेऽस्मिन् विजयप्रयाण  
रसिके प्रेङ्खत्तुरङ्गदुरदोभाङ्गुतरजेभिरम्बरमगादङ्गं क्षमामखलं  
॥ १६ ॥

जाता सङ्गरनीरधेः स्फुरदसिथालेन्द्रभास्वङ्गुजा मय्याद्रेरसती-  
व वाञ्छितबज्रप्रीतिः सदा श्रीरियं । अस्मिन्नेव नराधिनाथतिलक  
स्थैर्यं गता यत् पुनर्वीजं तत्र किलास्य शाश्वतमसौ जाग्रद्यशश्चन्द्रमाः  
॥ १७ ॥

उद्यद्दिविजयार्थसाधनविधौ गङ्गान्वयक्ष्माभुजान्दिव्यास्त्रं चतुरङ्ग-  
तोऽधिकतरः सैन्यात्स्यकोऽभवत् । श्रीस्रप्रश्वरदेव एव विलसत्प्रसू-  
त्तारिन्दिरत्नीलालौघविनिर्मिताष्टममहाम्भोधिर्नयाम्भोनिधिः ॥ १८ ॥

लक्ष्मीदेव्याः पतिरयमधोऽनेन चक्रे वलिद्विट् गोपालस्य प्रियसुहृदयं  
सर्वकार्येऽच्युतोऽसौ । विश्वक्सेने धरणिरियमयुद्धता येन मया  
अस्मिन् जन्मन्यपि सुचरितैरेष विश्वम्भरोऽभूत् ॥ १९ ॥

यद्दानविगलद्वारिमाटका भूतमाटकाः सस्यसम्पत्तिसम्भारैर्दीन-  
हीनाऽभवन्मही ॥ २० ॥

कैलासाद्रिहिमाचलस्तनतटव्यासङ्गिमन्दाकिनीहारश्रीर्यदिकीर्त्तिरस्य  
तिलकं चन्द्रं कलङ्काशयात् ॥ ज्योत्स्नाहासमुखीपयोधिरसना कुन्दद्युतिं  
नात्यजत् क्षायं स्यादिह चन्द्रशेखरपदारुटो मृडानीपतिः ॥ २१ ॥

भक्तिप्रहसुरासुरेन्द्रविलसन्मौलिस्थरतावलीच्छायाशक्रधनुःस्फुरत्य  
दलसत् मेघेश्वरस्यामुना । उन्नत्याऽपरपर्वतो बज्रतरद्रव्यचयं कुर्वता  
प्रासादो रचितः सुधाच्छविहसत्कैलासशैलेश्वरः ॥ २२ ॥

स्वर्साद्रिः ससुरालयो हरिखुरक्षुसश्च पूर्वा गिरिर्वारुण्या परिचुम्बि  
तोऽस्तशिखरो मान्यः स गौरीगुरुः । इत्यद्यापि पराम्बघन्नवनवस्थानं  
चलन्मन्दिरो लङ्केन्द्रेण शिलोच्चयं गृहमदः प्राप्तोऽनवद्यं शिवः ॥ २३ ॥

इह विजयिना प्राकारश्रीर्महोपनिर्मिता जलधरगतीरत्युन्नत्या  
निरोद्धुमिवोद्धता । कलिजलनिधेर्मर्यादालीभयादिव तस्य वै शरणम  
विशद्भर्मा यत्र त्रिनेत्रसुरक्षया ॥ २४ ॥

यासां नेत्राच्चलतरलिमा विश्ववशैकमन्त्रः पादन्यासस्त्रिभुवनगतिस्त  
म्भनं संविधते । नृत्यारम्भे वलयमणिभिर्निर्मिताऽयत्नदीपास्तस्मै दत्ता  
स्त्रिपुरजयिने तेन तास्ता मृगाक्ष्यः ॥ २५ ॥

उपवनमथ चक्रे तेन मेघेश्वरस्य स्फुरितकुसुमरेणुश्रेणिचन्द्रातपस्रि ।  
अविरतमकरन्दस्यन्दसन्दोहवैर्धृततरतिपतिलीलायन्तधारागृहत्वं ॥ २६ ॥

वनश्रीमुक्ताखकृदरदलितपुष्पोत्करमितत्परागैर्भङ्गालीकलितसितिमा

यत्र जघनी । मुनेः पुष्पास्त्रस्य स्फटिकपुटिताच्चावलिरियं वसन्तोद्यन्मत्त  
द्विपशिरसि नक्षत्रविततिः ॥ २७ ॥

अत्यच्छं शरदम्बरात्सुरसरित्तोयाच्च पापापहं गम्भीरन्नयशालिनापि  
हृदयात् शोतञ्च चन्द्रद्युतेः । हृद्यस्वादु सुधारसादपि सरो वारान्निधेः  
सौदरन्तेनाखानि नरेश्वरप्रणयिना मेघेश्वरस्थालये ॥ २८ ॥

आनन्दैकनिकेतनं नयनयोः शश्वन्मनःकैरवज्योत्स्नौघः खलु विश्व  
कर्मनिपुणव्यापारवैदग्ध्यभूः । ग्रीष्मग्रासभयातिभातजनतासौन्दर्य  
दुर्गालयो मार्गः कीर्त्तिविष्टम्भणस्य जयिना प्रोत्तम्भितो मण्डपः ॥ २९ ॥

अपां शालामालाः पथि पथि तडागाः प्रतिपुरं प्रदीपाः सम्पूर्णां  
प्रतिसुरगृहं यस्य विमलाः । मठा वेदादीनां द्विजपुरवहाराः प्रति  
दिशं विराजन्ते सत्राण्यपि च परितः सेतुनिवहाः ॥ ३० ॥

आराद्ब्रह्मपुरं बृहस्पतिपुरस्पर्द्धिं स्मरारेः सदाचार्यं विष्णुमभि  
स्फुरद्विजबरग्रामाय धर्मात्मने । दत्तं तेन मुदा सदेदितमखप्रारब्ध  
धूमध्वजस्फूर्ज्ज्जूमचयेन यत्र स कलिव्यालः समुत्सायते ॥ ३१ ॥

तं प्रत्यतिष्ठद्विजराजपूज्यः प्रासादमीशस्य सनन्दकश्रीः । सुदर्शनं  
नान्वित रघु विष्णुराचार्यराजः सपृथक् न विष्णोः ॥ ३२ ॥

उदयनकविस्तस्यादेशात्प्रशस्तिविलासिनीं सुललितपदन्यासैः शश्वद्वि  
दग्धमनोहरां । ध्वनिभिरनिशं कण्ठे श्लिष्टामलङ्कृतिहारिणीमतिर-  
सतया शय्यायातां प्रसाधितवानिमां ॥ ३३ ॥

यावत् ज्योत्स्नासुधांशू धरणिफणिपतो यावदम्भोजलदम्बौ याव  
द्यावच्च गङ्गाहिमधरणिधरौ यावदेवाणवोमीर् । वागैर्था यावदस्मिंश्चर  
मनुवसतोऽद्वैतरूपेण लोके तावत् प्रासादकीर्त्ती त्रिभुवनकुहरे राज-  
तामस्य नित्यं ॥ ३४ ॥

। श्री । दिशि धवलधीरतनयः स चन्द्रधवलः प्रशस्तिमिह पट्टे ।  
सरत्नाक्षरमालाभिलिलेख मेघेश्वरद्वारे ॥ ३५ ॥

सूत्रधारः शिवकरः सदृत्तामक्षरावलीं । निचखान शिलापट्टे मुक्ता  
फलनिभामिह ॥ ३६ ॥

*Translation by the Rev. WM. YATES.*

1. Salutation to SHIVA. The row of skulls (on KA'LI') are dancing over SHIVA\*, being made alive by the stream of nectar flowing from the bright flame of the eye in his shining forehead. Seeing this, the moon thinking one Ráhu had become many, took refuge in the fortress of *Gangá* amidst the wood of SHIVA's thick hair: may that moon preserve you.

2. "Who is this that from the pride of the eye in his forehead subdues all the world?" May that GAUTAMA, the chief of sages, who in thus addressing SHIVA with detraction, transferred the brightness of his eye into his own foot, live for ever.

3. The prince of his family was the ornament of the world which is the birth-place of all, revered by the learned, the seat of virtue, and glorious as the mountain that churned the mighty ocean. He was glorious: the whole earth was overspread with the creeper of his fame, and he was the eradicator of the white lily of his enemies' glory, which was withered by his powerful rays.

4. He was the ornament of all his race; by him the boisterous host of all opposers was defeated. Hence he outshone the moon, and laid the beautiful spreading creeper of his jasmine-like fame prostrate in the dust. He was the first and chief of all.

5. From this source of virtue sprung AHIRAMA, worthy of praise, the possessor of ethical skill, who by his unbounded glory was like the mountain on which the full moon rises. When he exerted himself in the virtue of liberality, the triumphant banners of his pure and shining honor were resplendent before the palaces of the three worlds.

6. From AHIRAMA were born two individuals, a son and a daughter, like the moon and LAKSHMI' from the sea, and they were fitly named SWAPNESWARA and SURAMA'. The one, as an ornament of the world, was the possessor of all virtues; and the other, as the destroyer of the disease poverty, was like the goddess of wealth.

7. He became the glory of his race, and, like SHIVA, distinguished by endless good qualities. His lotus-like feet rested on a footstool enlightened by gems in the crowns of prostrate kings.

8. When the disk of the glorious sun was shining on the sea of dust excited by the hoofs of his galloping steeds, and setting to opposing kings, then fortune accompanied with companions from all sides, and adorned with the pearls of elephants slain, met him in the midst of the field of battle according to appointment.

9. "Ho! ye young and aged, shall famine ever come to you? am I prepared to offer sacrifice only for the gratification of the eaters of flesh?" Hearing these his words, the evil spirits around filled all their granaries with the flesh of enemies slain in battle.

\* SHIVA is here supposed to be prostrate and KA'LI' standing on his breast. He has three eyes, one in his forehead with the crescent of the moon.



10. From him who resembled INDRA, was born a generous son possessed of an arm strong enough to sustain the weight of universal government. This glorious monarch, SRI' RAJARAJA, then governed the world.

11. The servants of INDRA were all confused, one laying hold on the tail and another on the proboscis, were dragging on shore his elephant, which, while sporting in the water, had fallen into the mud that had been collected in the heavenly river from the abundant dust raised by the hoofs of the spirited steeds of this king.

12. If so many enemies had not indeed been constantly killed in battle by this king having an arm like VISHNU, then, in this iron age, in which wickedness so much abounds, how could BRAHMA' have formed so many gods\*?

13. SURAMA', which is another word for the goddess RAMA' or LAKSHMI, and who was also called ANTAHPURA-SUNDARI', was the glory of all jewels. She, assimilating quickly with the excellent man whom she married, gave away mountains of gold, and became renowned, and the sole envy of kings.

14. This distinguished king, after enjoying for a long period all the pleasures of the Kali-yuga or iron age, and becoming old, anointed to the kingly office, his younger brother ANIYANKA-BHI'MA, at whose feet other kings bowed.

15. This ANIYANKA-BHI'MA was a renowned monarch, a famous emperor, the supreme ruler over opposing kings, who yet did not seize upon their wives. This moon of men, with strength like INDRA's, having obtained the sea-girt circle of the earth, soon made it like the circular discus held in his hand.

16. Oh, ANANTA†, what say you? The great weight sustained by the tortoise you know is insignificant, but the weight sustained by the glory of the king of the three Kalingas I know not. Hear this! When this king delights to go forth to victory, half the earth rises to heaven in the form of dust excited by the strokes of the hoofs of his fleet steeds.

17. Fortune herself springing from the sea of contest, holding in her hand a sword bright as the king of serpents, and desiring the love of many, like the faithless woman produced by the mountain Mandara, remains constantly with this renowned king: the proof of which is furnished in this, that the moon of his fame is still always shining‡.

18. Like the famous SWAPNESWARA, he went forth to complete the conquest of the world, and was himself *alone* greater than the *complete* armies of the kings descended from GANGA' with all their bright weapons.

\* It is supposed that those who die in battle are saved: in these words, the doctrine of Apotheosis, as believed by the Greeks and Romans, is distinctly avowed.

† *Ananta* is the serpent on whose head the earth is supposed to rest: he supports the tortoise that bears the earth.

‡ The moon and *Lakshmi* or fortune are supposed to have been produced by the gods at the churning of the ocean, and to have a common origin and end.



He was the divine treasury of justice, and formed a new ocean by the blood flowing from the foes slain by his bright arms.

19. He was the lord of *Lakshmi*\*; the opposer of *Bali*; the beloved friend of the herdsmen; the never-failing one in all his undertakings; the *Vishwakshena* by whom the deluged world was raised; and the real *Vishwambhara* by his virtuous deeds in life.

20. The earth, the mother of all creatures, was nourished by the streams of his benevolence, and enriched with abundance of corn and wealth.

21. If his fame is bright as the necklace-like river *Mandakini*, where united with the breast of the *Kailasa* and *Himalaya* mountains, then where is SHIVA, ascending to the top of the *Chandra-shikhara* mountain, if he does not remove the stains from that moon, whose smiling face is bright with light as the white jasmine or froth of the ocean?

22. This other great mountain *Kailasa*, abounding with pure nectar, was made a palace by SHIVA's expending the wealth of this INDRA-like king, whose feet were rendered glorious by the rainbow, or reflection of the rays from the gems on the heads of the obedient Surs and Asurs.

23. *Sumeru*, with the residence of the gods, was injured by the hoofs of this king's horses, also the eastern mountains, and the western peaks were touched by *Varanî*†: so the venerable SHIVA, seeking after fresh places, and having no settled temple, at last gained, with the king of *Lankâ*, this unparalleled mountainous habitation.

24. By this victorious one inclosures were formed so high as to obstruct by their elevation the movements of the clouds. And here virtue by SHIVA's interposition, for fear of the aggression of the sea of wickedness, took refuge.

25. The women, the glance of whose eyes was all-subduing as a *mantra*, and the motion of whose feet made the three worlds motionless; and whose lamp or light was formed by their bracelets and jewels when they began to dance—these deer-eyed ones were given by this king to SHIVA.

26. By him a garden was made like INDRA's, shining bright with the farina from the full-blown flowers, and constantly watered by the distillation of the juice of flowers, as by the sportive engine of KA'MADEVA‡.

27. The star-like marks on the heads of the elephants that are furious in the spring, are nothing more than the dice spots of the sly KA'MADEVA set in crystal. There the white is made triumphant by the humming bees covered with farina from the scattered flowers, which are the pearls of the necklace of the wood.

\* This and the following are metaphors: the meaning is, that he was like the persons mentioned.

† *Varanî* means the western horizon, and also spirituous liquor, by the touch of which a person or thing is defiled.

‡ Cupid.

28. By this kind king an immense pond was cut near his INDRA-like palace. It was in size like the sea; its water was clearer than the autumnal sky, more purifying than the waters of the *Ganges*, more deep than the heart of the profound casuist, more cold than the rays of the moon, and more delicious to the taste than nectar.

29. By this victorious one an open temple was built, and it was the delight of the eyes; the moon-light of the white lily, the mind; the splendid workshop of the celestial artist VISHWAKARMA, the beautiful fort of those afraid of being seized by heat, and the way of him who covets fame.

30. Houses with water were on every road, tanks in every city, lamps full and splendid in every temple, sheds for reading the Vedas, &c. in every direction, the ornaments of the bráhmañ cities. Sacrifices too and bridges were conspicuous in all directions.

31. By him was given with pleasure to the preserving bráhmañs, for residence, a city of BRAHMA', one nearly equal of VRISHASPATI, and one of SHIVA, and one of the venerable VISHNU. There the serpent wickedness was withered by the crackling smoke, the sign of sacrifices commenced.

32. The famous SANANDAKA, the most venerable of bráhmañs, remained near this palace. This chief of teachers was in appearance like VISHNU, and differed nothing from him.

33. The poet UDAYANA, by the king's command, wrote this (eulogy) which resembles a fine woman, always charming in the motions of her handsome feet, with harmonious sounds in her throat, adorned with ornaments, and coming with pleasure to my resting place.

34. As long as the moon and its rays, the earth and its supporter, the lotus and *Lakshmi*, *Gangá*, and the supporter of *Himálaya*, the sea and its waves, words and their meaning, abide together in the world, so long the palace and fame of this king will ever shine through the three worlds.

35. SACHANDRA-DHABALA, the son of DHAVALA-DHIVA, wrote this excellent inscription on a slab in jewel-like letters over the door of this INDRA-like king.

36. The best artist engraved these well arranged words, which resemble pearls, on a stone-slab.

III.—*Specimens of Hindu Coins descended from the Parthian type, and of the Ancient Coins of Ceylon.* By JAMES PRINSEP, Sec. As. Soc.

Among the coins extracted from the *Manikyala* tope were two that excited more than ordinary curiosity from their having marginal inscriptions in Sanscrit characters around a device in all other respects of the Sassanian type. The inscription (which will be found in Plate XXI. of vol. III. also p. 439) baffled all attempts to decypher it. The repetition of the word *Sri* left little doubt of its language being

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Sanscrit, but neither with the aid of modern nor ancient alphabets could the sentence be made out. The individual letters seemed to be

श्रीहृतिविरघेरभवदरपविर श्रीहृतिणचदवजारि :

Shortly afterwards, among the coins procured for me by KERA'MAT ALI, another instance of the mixture of legends was discovered (Vol. III. Pl. XXV. p. 439) ; and here the name was clearly श्रिवसुदेव *Srī Vasudeva*, either denoting the god KRISHNA, or the Indian monarch of that name alluded to in the Persian histories. Mr. MASSON'S last memoir containing one or two coins of the same class, led to a fresh scrutiny of our respective cabinets, whence with Capt. CUNNINGHAM'S aid I have now assembled a tolerable group of Indo-Sassanian specimens, for inspection at least, though it will be difficult to say much about them.

The distinctive characters of the Sassanian or Parthian coins are, the fire-altar reverse, the peculiar head-dress of the king with flowing fillets,—sometimes the latter attached to the shoulders,—and a legend in the Pehlevi character. There is, however, as Mr. MASSON has pointed out in a memoir published in this Journal\*, a marked difference between our coins, (called by TOD “ of a Parthian dynasty unknown to history,”) and the genuine series of *Persia* proper.

Sassanian coins, of the type common to *Persia*, are never found at *Beghrām*, according to MASSON, although they are brought for sale in abundance to the bazar of *Cábul*. Two exceptions, however, are noted,—one, an extensive series of small copper coins having a crowned head on the obverse, with a name in the same character as that on fig. 3, greatly resembling the corrupted Greek of the deteriorated *Nanorao* group—the commonest inscription can be exactly represented by the English type **posopo**. One of this group, supposed by Mr. MASSON to bear the *Bamián* name, was depicted in his note on the antiquities of that place in Vol. V. On the reverse of all these is the fire-altar without supporters, “ demonstrating, at least,” as Mr. MASSON writes, “ that they were adorers of *Mithra*; while from the numbers in which these coins occur at *Beghrām*, it may be further inferred that they were current there, and that the sovereigns they commemorate ruled there: although the difficulty then presents itself to determine at what period to introduce their sway, with the mass of Greek and Indo-Scythic coins before us. The coins themselves, however numerous, may be reduced into three series with reference to the nature of the head-dress. The first class bearing a helmet, the second a crown with a ball above it, and the third a

\* Note on the *Bámian* antiquities, vol. V. p. 711.

tripartite crown surmounted by an arch of jewels." All these head-dresses, it must be remarked, are met with in the regular Sassanians of Persia, and it may therefore be possible that they were but a provincial coinage of the same dynasty. It was under this impression that I omitted to engrave the figures of these coins, reserving them for a Sassanian series,—although some of them would have served remarkably well as the precursors or prototypes of the copper coins about to be described in Plate XV.

The second exception noted by our countryman at *Cábul* is the Indo-Sassanian group, figs. 3, 5 and 6, of Plate XIV. "The strongly marked Indian features of the busts, and their plentiful occurrence at *Beghrám*, especially of their copper money, prove these princes to have ruled here. The heads are remarkable for the bulls' (or buffaloes') skulls around them,—some having four or five of these ornaments, but in general one only surmounts the cap. The legend is in a peculiar and unknown type. The reverse is distinguished by the wheel over the heads of the altar defenders." A great many of the type No. 5 were extracted from the principal tope of *Hiddah* near *Jelalábád*. (See Vol. V. p. 28.)

Mr. MASSON (J. A. S. Vol. V. 711) refers them to the *Kiánián* dynasty of Persian historians, to whom he would also attribute the *Bamián* antiquities. He cannot of course here allude to the early branch, which includes CYRUS, CAMBYSES and DARIUS HYSTAPES, for it is very vident that the coins before us cannot equal, much less surpass, in antiquity the celebrated *daric archers* of Spartan notoriety. He must rather speak of their far descendants, to whom the present independent chiefs of *Seistán* still proudly trace their origin. This race under the name of *Tajik* claims proprietary right to the soil, though encroached upon by the *Afgháns* on all sides, and at *Bamián* they are found inhabiting the very caves and temples constructed by their infidel progenitors.

As to the probable date of these coins then, little more can be conjectured than that they were contemporaneous with the Sassanian dynasty in *Persia*, viz. between the third and sixth centuries. Their frequent discovery in the *Panjáb* topes, accompanied with the Indo-Scythics having Greek legends, should give them a claim to the earlier period; but as far as the fire-worship is concerned, we learn from PRICE'S Muhammadan history, that "as late as the reign of MASAU'D, son of Sultán MAHMUD of *Ghizni* (A. D. 1034), a race, supposed to be the remnant of the ancient Persian stock, submitted to his arms," who had doubtless maintained their national faith to that time unchanged.

The intimate relation between the worshippers of MITHRA and the followers of the *Vedas*, is established by the affinity of the language in which the books of ZOROASTER are recorded, with the Sanskrit. The learned restorer of this ancient text indeed cites some reasons for giving priority to the Zend as a language, and he finds many occasions of interpreting the verbal obscurities of the *Vedas* from analogies in the latter. I cannot refrain in this place from noticing, in allusion to Mr. MASSON's location of the *Kaianians*, a passage in M. BURNOUF's most elaborate *Commentaire sur le Yaçna*, just received from *Paris*, bearing upon this point, and leading to the unexpected conclusion that the *Kaianians* of Persia and the *Suryavansas* of India, are the same, or have a common origin. The word *kai* preferred to so many names (as *Kaiumars*, *Kaikobad*, *Kaikaous*, *Kaikhosru*, &c.) having the same signification as the Sanskrit *kavi*, कवि, "the Sun." Against such a hypothesis, however, M. BURNOUF confesses that the *Gujerati* translator of the *Yuçna*, NERIOSINGHA, renders the word كِي *kai*, simply by the Sanscrit equivalent for "king." I give the passage at length, as of first importance in a discussion on a mixed Indo-Sassanian coinage.

"Je n'ai pu, jusqu'à présent, déterminer si les *Kaïaniens* ou les rois dont le nom est précédé de *ké* (en Zend *kavi*) sont les rois *soleil* ou des rois descendant du soleil; en d'autres termes, si le titre de *soleil* a été joint au nom de chacun de ces rois, uniquement pour indiquer la splendeur de leur puissance, ou bien si le chef de cette dynastie a passé pour descendre du soleil, et s'il a laissé ce titre à ses successeurs, comme cela a eu lieu dans l'Inde pour les *Suryavança*. Je ne veux pas ajouter une hypothèse étymologique aux traditions fabuleuses dont les *Parses* ont mêlé l'histoire de ces rois; mais il serait intéressant de retrouver la forme Zende du nom du premier des *Kaïaniens*, de *Kobád* كَوْبَاد, nom dans lequel on découvrirait peut-être le mot *kavi* (nom. *kavá* et *kava*), soleil. Si *Kobád* pouvait signifier "le soleil" ou "fils du soleil," la question que nous posons tout à l'heure serait résolue, et les autres *Kaïaniens* n'auraient reçu le titre de *kavi* (*ké*) que parce que la tradition les regardait comme issus d'un fils du soleil. Je remarquerai encore, sans attacher toutefois beaucoup d'importance à ce rapprochement, qu'on trouve dans l'histoire héroïque de l'Inde plusieurs rois du nom de *kavi*, et notamment un fils de *PRİYAVRATA*, roi d'*Antarvédi*. HAMILTON dans l'index de ses *Genealogies of the Hindus* cité quatre personnages de ce nom, sans parler de deux autres rois, dans le nom desquels figure ce même titre de *kavi*\*. Enfin M. ROSEN a cité un

\* *Gen. Hindus*, page 77, on trouve dans le *Rik* et dans le *Yadjourvéda*, un roi nommé *Cavasha*, (COLEBROOKE, *As. Res.* VIII. 399;) et ce qui peut faire penser

vers extrait d'un hymne du Rigvéda, dans lequel les mots *viçám kavim*, voisins du composé *viçpatim*, doivent peut-être se traduire plutôt par *hominum regem* que par *agricolarum vatem*."—[*Commentaire sur le Yaçna, chapitre I. p. 455.*]

I now proceed to particularize the coins inserted in my plate.

*Indo-Sassanian Coins, Plate XIV.*

*Fig. 1*, a silver coin in my cabinet of an unique type:—*Obverse* the prince on horse-back, head disproportionate in dimensions. On the horse's neck is a flower vase\*, which is probably supported by the man's left arm; on the margin are some indistinct Pehlevi characters and on the field a monogram, resembling the Nágari letter ञ. The device on the *reverse* is nearly obliterated.

*Fig. 2*, a copper coin, also unique: it escaped my detection among a number of old *Bokhara* Musalmán coins, or it should have appeared along with the *bull* and *horseman* or Rájpút series of December, 1835. It seems to link this curious outline group with the full-faced Sassanians of *VASUDEVA*, &c.; for on the border of the obverse are Pehlevi letters. The features of the supposed face are barely admissible as such even on the lowest estimate of native art. The horse on the *reverse* is more palpable, but it seems more like a *toghreh* or flourish of Persian letters, than ever. It is also reversed in position, and has no Nágari legend.

The coins of this genus, although we have found them connected with *Delhi* sovereigns and *Malwa* rásas at one end of the series, evidently reach at the other to the bráhmanical rulers of the *Panjáb*, and probably *Cábul*. They are procured much more abundantly at the latter place (and on the site of *Taxila* according to *M. COURT*) than in any part of India. Some of them exhibit on their reverse the style of Arabic now known to belong to the *Ghaznavi* Sultáns, while others agree rather with the *Ghori* type, and contain known names of that dynasty.

*Fig. 3*, a silver coin in my cabinet, K. A. Several of the same nature are depicted by *MASSON* as noticed above. The execution is very bold and the preservation equally good. A double blow has, however, confused the impression on the reverse.

The head-dress or helmet is surmounted by the head of a buffalo, in imitation perhaps of *MENANDER*'s elephant trophy. The two wings common on the Sassanian cap are still preserved. The

a quelque monarque *Bactrien*, c'est que ce *Kavacha* est père de *Tura*, dont le nom rappelle le *Touran*. Mais je ne crois pas, pour cela, que *Kavacha* puisse être identifié avec le mot *Zend* et *Sanscrit kavi*.

\* Perhaps the *Kámacumbha* or vase of abundance, of *Tod. Ann. Raj. I. 603*.



prince wears a profusion of pearls and handsome earrings. In front of his face is a legend in an unknown character, which can, however, be almost exactly represented by Nágari numerals, thus : ३ १४ ० ३ ० २. None of the pure Pehlevi is to be seen on either face, but on the shoulder in the corner is something like a Nágari म, which is probably an *m*, not a *bh*. The fire-altar of the reverse is remarkable from the two wheels or *chakras* over the officiating priests. We shall see more of these again as we descend.

Fig. 4. is a silver coin in Dr. SWINEY'S possession : it is of inferior workmanship, the features *beginning* to be cut in outline. A diminutive figure (female) in front of the face holds a flower or cornucopia :—just above can be discerned two small Sanskrit letters प्रतः *prati* or *pratá* . . . which suffice to ally the coin with our present group.

The two succeeding figures are from MASSON'S drawings, some of which have already appeared in lithography. Fig. 5 represents rather a numerous class of the same type as fig. 3. The letter of the legend is sometimes omitted, and the ∞ becomes a ∞ ; but without examining the coins themselves, it would be unsafe to argue on such differences. No. 4 represents a variation of the monogram, it may be an old form of म

Fig. 6, is an interesting coin, similar to my *Vasudeva*, and the *Manikyala* coins in some respects, but hardly so far advanced towards Hinduism, inasmuch as the fire-altar is retained, and the full marginal legend on both sides is in the unknown character, while the Nágari occupies only a secondary place on the field. This name, too, is, as it stands in MASSON'S drawing, wholly uncertain, with exception of the initial *Sri Va* . . . It may be श्रीवहरवह . . .

We now arrive at a class of coins of considerable interest as well to the history of India, as to the science of numismatics ; for the gradual manner in which the nature of their device has been developed is as much a matter of curiosity, as the unexpected conclusion to which they lead respecting the immediate prevalence of the same Sassanian (or ignicolist) rule in Upper India, while the foregoing coins only prove the mixture of Hinduism with the religion of Bactria.

Colonel TOD has repeated an observation of Dr. CLARKE the traveller, that "by a proper attention to the vestiges of ancient superstition, we are sometimes enabled to refer a whole people to their original ancestors, with as much, if not more certainty, than by observations made upon their language, because the superstition is engrafted upon the stock, but the language is liable to change." In some respects the converse of this proposition would be better

for instance, in figs. 11, 13, and 14, where the eye, nose, lips and chin resolve themselves into elementary dots, very like those on the Saurashtra coins.

Fig. 9 has the letters श्रीध or श्रीध Srī Ladhā . .

Fig. 10, a small copper coin belonging to Dr. SWINEY, is in a far superior style, with the exception perhaps of an unaccountable substitution of the *chakra* for the head of the attendant at the altar! Can thus it denote the Sun himself? There are letters in front of the face श्रीद . . . Srī Dat . . . or some such name.

In figs. 11 and 12 (which latter gives the lower portion of the same die), there are more letters than usual:—enclosed in a circle on the cap or crown the letter स s: then in front of the nose the usual श्री, and below it the ढ or h of the same alphabet.

In the lower series (13, 14,) the shoulders and hand are generally replaced by letters. On some the context seems to make श्रीविग्र . . Srī Vīgrā (*ha*); on others श्री यो . . Srī Yo, and श्रीपि . . Srī Pi . . . None are complete enough to give us a cognate name.

Having conducted this line of Indo-Sassanians down to its amalgamation in the *Varāha* series of my former plate, we may recede, once more, back to the period when the Indian artists could execute a less imperfect copy of the Grecian or Sassanian portrait-die.

Figs. 15, 16 of this plate, and 6 of the ensuing one, are types of a distinct group of copper coins, plentiful in the SWINEY and STACY cabinets. The appendage to the shoulder decides the Sassanian origin, and the wheel on the reverse seems to be borrowed from the emblem above the fire-altar. I incline to think it the solar effigy, rather than the symbol of a *Chakravartī*, or ruler of universal dominion. It is probable that this common emblem is still preserved in the sun of the *Ujjain* and *Indore* coins of the present day. There is the appearance of a letter in front of the face, but ill defined. On the opposite side, however, the two large letters under the wheel are most distinctly तौर, *tora*, the meaning of which remains a mystery. They are not in the same alphabet as that of the preceding coins, but of the more ancient *lāth* character which accords so far with the comparative superiority of the engraving.

#### Plate XV.

Figs. 1, 2, 3, from Colonel STACY's drawings, and 4, 5, from Dr. SWINEY's coins, are closely allied to the series just described: the Indian bull only being brought on the reverse, generally with the retention of the *chakra* under his feet or on his haunches. The name in front of the *rāja's* face in figs. 3 and 4 contains several recogniza-

ble letters; on fig. 5 they are still more distinct, श्री प्रहेर कु it may possibly be intended for श्री महाराजा *Srī Mahārājā*, leaving us still in the dark for a name.

On the reverse of fig. 4, under the bull, are the letters विजय वग *vijaya vag.* . . a form that will be found more developed in another branch of this curious series below.

In the next variety, figs. 7 and 8, of which Dr. SWINEY boasts the largest supply, the Sassanian head is no longer retained, but the *chakra* remains coupled with a kind of cross which may be read as the syllable *ku* of the old alphabet. The bull of the reverse is now accompanied by an attendant exactly in the fashion of the inferior *Kadphises* or OKPO group of the *Mithraic* coins.

In the succeeding variety, figs. 9, and 10 (SWINEY), the *chakra* gives place to the trident (of SHIVA?) and the bull takes an attitude of repose à la *Nandi*. The letters वोदीसगु *Vīdī sagu* or *Vedēsagu* are bounded by the marginal dots, and must therefore be complete, however unintelligible. Were there room for a final न्न we might conjecturally read विदेशगुप्त *Vīdēsagupta*, “cherished by foreigners;” which would tally with the notion of a Parthian interloper.

In fig. 11 (which I also engraved in the *Kadphises* plate of vol. III.) the trident has the letters त्र *tri*, as if for *trisula*.

In figs. 12 and 13 the symbol is more like the original fire-altar :—to the former are adjoined the letters रुद्र, or perhaps रुद्र *Rudra*, a name of SHIVA.

In figs. 14, 15, (STACY,) and 16, (SWINEY,) the standing figure has quitted the bull to take the chief post on the obverse—the marginal inscription of 14 commences with राज and the last letter is स.

In figs. 17, 18, (SWINEY,) the bull is again replaced by the *chakra*, with two Sanskrit letters घन or सुत—sense unknown.

And now we advance or perhaps it would be more correct to say retrograde to a much more satisfactory group, forming as it were a link between these Indo-Sassanians, and what have been called the Buddhist coins.

The specimens of this series, christened the “cock and bull” by Colonel STACY, and first made known by him, were deficient in preservation; but Mr. TREGGAR of Juanpúr has since been fortunate enough to procure a considerable quantity of various sizes with the epigraph beautifully distinct. They were found in company with copper coins of the GUPTA series, which are in the same style both as to the letters and their horizontal situation in what is called the *exergue* of western numismatics. As pointed out by Mr. TREGGAR, there are three varia-

tions in the reading. On 20 and the coin below it; सत्यमितस *Satya mitasa*. On the fine coins figs. 21, 22; सयमितस *Saya mitasa*. And on Nos. 19, 23, 24 and 25; विजयमितस *Vijaya mitasa*. The variable portion of these, *satya*, *saya*, and *vijaya*, are evidently epithets, the perfect, the true, the victorious,—but the name to which they are applied, *mitasa*, whether of a person or thing, is unfortunately only open to conjecture. From the analogy of the *okro* bull, and the evident descent that has been traced in these plates to a *Mithraic* origin, I feel strongly inclined to read the word मित्रस्य “*mitrasya*, of the true, the victorious sun,” the *Mithras*.—*Mitra* has also the signification “ally,” if it be preferred to confine the title to a mundane ruler.

If the possessive termination be not made out, the terminal *s* may possibly be used in place of the *visarga*.

In figure 22, the trilingual symbol brings us directly to the extensive and oldest of our Hindu series. Of these we have, thanks to Mr. TREGGAR and Col. STACY, enough to fill another plate or two, but they must be kept distinct; while to close the present plate more consistently, I have inserted in figs. 26, 27, two small silver coins found by Capt. BURNES at old *Mandivi* or *Raipúr* in *Cutch*, having Sassanian heads, and reverses respectively corresponding to figs. 7 and 12.

The little copper piece 28, from the same place, has the Nágari letters श्री भौम *Srí Bhíma*; the last letter uncertain.

To balance these I have selected three copper coins of Dr. SWINEY'S store, on account of their having the *chakra* or the bull for obverse. On No. 31 we can read the titles श्री . . . महाराज *Srí . . . Mahárája*; the name as usual provokingly obscure! Dr. S. reads it *ganapati*.

#### Plate XX. Ceylon Coins.

After wading through the doubtful maze of obscurity exemplified by the foregoing coins, where we have almost in vain sought a feeble landmark to guide us even as to the race or the country whence they sprung, it is quite a relief to fall upon a series of coins possessed of their true and legitimate value as unequivocal evidence of the truth of history.

The peculiar coins of ancient *Ceylon* have been long known to collectors: they have been frequently described and depicted in books, and the characters they bear identified as Deva-Nágari, but little more. MARSDEN and WILSON, as will be seen below, were quite at fault in regard to them, and so might we all have remained had not the Hon'ble Mr. G. TURNOUR published his *Epitome of the Ceylon History from the Buddhist Chronicles*. Upon my publishing in vol. IV. a sketch of the coin which ranks first in the present plate, and suggest-



Ceylon

Coins.



Prinsep 1844





ing the reading *Srī Mayātraya Malla*, I remarked that, although princes of this family name were common in *Nepal*, I could find none in the *Ceylon* list to correspond. This observation elicited the following note from Mr. TURNOUR, which in justice to his sagacious and correct prediction ought to have been published long ago.

“ *Note on Hindu Coin*, fig. 22, of Pl. L. vol. IV.—In your valuable paper in the Dec. Journal, on Hindu Coins, you say that the name of *Malla* does not appear in my Catalogue. He is doubtless identical with *Sahassa Mallowa* in my epitome published in the Almanac of 1833. In the translation No. 6 of the inscription published in 1834, you will also find him called *Sahasa Malla*. That inscription contains a date, which led to an important correction in my chronological table explained at page 176. He commenced his reign in A. D. 1200. His being a member of the *Kalinga* royal family—his boastful visits to India:—and *Dambodinia* (which you have called *Dīpaldinna*) becoming the capital in about 30 years after his reign, where the former similar coins were found;—all tend to shew that the coin in question may be safely given to him. You will observe also by the inscription that his title was *Sirri Sangaba Kālinga Wijaya bahu*, surnamed *Sāhasa Malla*.

*Kandy*, 17th March, 1836.

GEORGE TURNOUR.”

There was no other *Malla* in the list, and therefore the assignment was probable, but I laid little stress on it from the total variance of the rest of the name. In August, 1836, Captain ORD, of *Candy*, sent me impressions of the coins he had met with, and pointed out that the first letter of the third line was not formed like ऋ but open like ॡ. To pursue the train of small causes leading to an important result, when lithographing the *Delhi* inscription of the 10th century in vol. V. page 726, the very first letter ञ struck me as resembling in the squareness of its form, □ the *Ceylonese* letter I had before mistaken for च. The enigma was thus in a moment solved, and every subsequent reading, (for coins of this prince are exceedingly common compared with others,) has confirmed the reading श्रीमत्साहसमल्ल *Srī mat Sāhasa Malla*, in accordance with Mr. TURNOUR's conjecture. In some few specimens the *t* of *mat* is either omitted through ignorance, or worn away; but in general it is quite distinct. MARSDEN's reading was मया दया मल्ल *Maya daya malla*.

The ice once broken, it became comparatively easy to find owners for all the other specimens either published in former notices, or existing unpublished in cabinets on the island.

Capt. ORD, not content with sending me drawings of those in his

possession, kindly transmitted the coins themselves, allowing me to retain the duplicates. Mr. TURNOUR also generously presented me some coins lately dug up in the ruins of the old city of *Montollee* by Mr. GIFFORD, Assistant Surveyor General. So that, including the gold coin sent me six years ago by Sir W. HORTON himself, and the coins in the Society's Cabinets from *Dipaldinna* (which are of the same class precisely), I am now in a condition to issue a full plate of this type, preserving a degree of chronological order in their arrangement.

The device on all these coins is the same; a rude standing figure or *rāja* on the obverse, holding a flower in the left hand, and an instrument of warfare in the right. The skirts of the dress are rudely depicted on either side of the body, and the fold of the *dhoti* falls between his legs, which being taken for a tail, has led some to call him HANU-MÁN, but I think without reason: there are 5 dots and a flower to the right. On the reverse the same figure is more rudely depicted in a sitting attitude. The mode of expressing the face is altogether unique in the history of perverted art.

*Fig. 1*, the gold coin sent me by Sir W. HORTON, has the inscription श्री लंकेश्वर *Srī Lankēswara* on the side of the seated *rāja*.

This name I presume to be the minister *Lokaiswara* of Mr. TURNOUR's table, who usurped the throne during the Sholean subjection in the eleventh century, (A. D. 1060;) but he is not included among the regular sovereigns, and the coin may therefore belong to another usurper of the same name who drove out the queen *LILÁVATI* in A. D. 1215, and reigned for a year. The Ceylon ministers seem partial to the name: one is called *LANKANÁTH*.

*Fig. 2*, a copper coin, copied from MARSDEN, but found also in Mr. LIZAR's drawings, though I have not seen the actual coin. The name is श्री विजाय बाहु *Srī Vijaya báhu*. (MARSDEN makes the last word गद् *gada*, erroneously.)

There are several princes in the list of this name: the first and most celebrated was proclaimed in his infancy in the interregnum above alluded to, A. D. 1071, and reigned for fifty years. He expelled the Sholians from the island and re-established the Buddhist supremacy.

*Fig. 3*, a copper coin, given to me by Capt. ORD. One is engraved in the *Researches*, and is doubtfully interpreted *Srī Rána náth* by Mr. WILSON. From many examples, however, it is clearly श्री पराक्रमबाहु *Srī Parákrama báhu*. The first of this name was crowned at *Pollonnarowe*, A. D. 1153, and sustained for 33 years the most martial enterprising and glorious reign in *Singhalese* history.

*Fig. 4.* Among the coins dug up at *Montollee* were several small ones of the same prince. *Srī Parákrama báhu* fills the field of the reverse.

*Fig. 5.* This coin, one of the new acquisitions, has the name श्री राज लीलावती *Srī Rāja Lílávati*, another celebrated person in Singhalese history. She was the widow of the *PARÁKRAMA* just named; married *KIRTI*, the minister of one of his successors, not of the royal line, who was put aside, and the kingdom governed in her name from A. D. 1202 until she was deposed by *SÁHASA MALLA*. She was twice afterwards restored.

*Fig. 6,* of *Srī mat Sáhasa Malla*, has already been described. The date assigned to this prince in the table is 1205 A. D. or 1748 A. B.; a date confirmed by a rock inscription at *Pollonarowe*, translated and published in the *Ceylon Almanac* for 1834, page 190. He again was deposed by his minister *NIKANGA*, and was succeeded in 1213 by

*Fig. 7,* श्री धर्माशकादेव *Srī Dharma Asoka deva*, a prince of a very imposing Buddhistic name, who was placed on the throne at the age of three months, but of whom nothing further is said. The *portrait* would lead us to suppose him of mature age.

*Fig. 8.* We here pass over a period of turbulence and continual invasions from *Chola*, *Pandia* and *Kalinga*, and arrive at a coin of श्रीभवानेक वाङ्ग *Srī Bhawáneka báhu*, who seized the throne on his brother's assassination by a minister in A. D. 1303. In his reign the Pandian general, *ARIYA CHAKRAVARTTI* took *Yapahu*, the capital, and carried off the *Dalada* relic so much prized by the Buddhists of *Ceylon*.

*Fig. 9.* We now come to a name of less certainty than the foregoing, and possibly not belonging to the island, for it is one of a large quantity of coins found by Col. *MACKENZIE* at *Dipaldinna* or *Amarávati*, on the continent of India,—a name so similar to the *Dambadinia*, where many of the *Ceylon* coins were discovered, that, seeing the coins were identical, I supposed at first the places must be so likewise. The uppermost letter is cut off. The next two below are decidedly ज, and under the arm we find श्री and र. The most legitimate context would be श्री (ग) ज राजा *Srī Gaja Rájá*, (A. D. 1127,) but the ग is hardly allowable.

There are many small coins (10 and 11) from the same place, reading like it the same indefinite title राज *rāja*, to which no better place can be assigned.

*Fig. 12.* Here again is a common variety of the *Dipaldinna* series, which was thought utterly hopeless, until Mr. *TURNOUR* favored me with drawings of Mr. *LIZAR*'s collection. Two of these (figs. 13 and 14) exhibit a new type of reverse, the Indian bull *Nandi*, which may

possibly betoken a temporary change in the national religion. The legend beneath I immediately recognized as identical with the flourish on figure 12, turning the latter sideways to read it. What it may be, is a more difficult question. The first letter bears a striking analogy to the vowel *e* of the Southern alphabets—but if so, by what alphabet is the remainder to be interpreted? for it may be equivocally read *bètya*, *benya*, *chètya*, and perhaps *Chanda* or *Nanda*. The last alone is the name of a great conqueror in the Cholian and other Southern annals, but it would be wrong to build upon so vague an assumption. It is, at any rate, probable that the bull device is a subsequent introduction, because we find it continued into the *Hala Canara* coins below.

*Fig. 15*, of the Society's cabinet, a thick well preserved coin, has a device one step less recognizable as a human figure on the obverse, but the bull very neatly executed on the reverse, and in front of him the Nágari letters *वै वि*, as if of *Vira báhu*, 1398?

*Figs. 20, 21*. In these the upright figure has quite disappeared, or is dwindled to a mere sceptre: leaving space around for the insertion of a legend in the old Canarese character, of which an alphabet was given in my last number. It is, unluckily, not complete, but the *Canara* letters . . *da cha* . . *ráya* are very distinct.

But before touching such modern specimens, I should perhaps have noticed a few other genuine old coins; some, as *fig. 16*, having a bull and two fish; others, as *fig. 24*, having a *singha* and four dots. They were all dug up at *Montollee* with the rest.

These symbolical coins without names agree in every respect with the numerous class of Buddhist coins found in India, and fellows to them may be pointed out among the *Amarávatí* coins, as *figs. 17, 19*, of the bull kind, the reverse plain or uncertain; one much resembling a ship; and *fig. 25*, a prettily executed brass coin of a horse.

One fragment, *fig. 18*, of the sitting bull, from *Montollee*, has the letters *त्रोवी* . . *कच* in the Nágari character on the reverse.

The two very small coins, *22, 23*, retain some of the *Ceylon* symbols—the anchor-shaped weapon (of *HANUMÁN*?) in particular; but to show how cautious we must be in receiving as equally old, all the coins found buried together in the same locality, I have given as the finale to this plate, one of the *Montollee* specimens, *fig. 26*, which, however mystified by the ignorance of the die-engraver, I cannot interpret otherwise than as an old Dutch *paisa*, stamped on both sides  $\frac{1}{8}$  St. or one-eighth of a stiver! A *Seringapatam* *paisa* with *xx. CASH* (written invertedly, *HSACXX*.) has often puzzled amateur collectors in the same manner.



IV.—*On the Revolution of the Seasons, (continued from Vol. IV. p. 257.)* By the Rev. R. EVEREST.

A correspondence between certain atmospheric phenomena, and certain positions of the moon, similar to what we have attempted to trace in the preceding papers, has been observed before in various ways, by others, and, in a degree, in all ages. But the objection may be fairly urged to such attempts, that, if we examine the supposed correspondence closer, no regular succession of phenomena can be made out. No state of the atmosphere can be expected to return of a certainty upon the recurrence of the assumed cause: nor, in such cases, can any probable circumstance be assigned, which might be supposed to have counteracted its operation. We may remark, however, upon this, that no two cases are precisely similar; one of the principal conditions of the problem, viz. the heating surface of the earth, never remaining the same, owing to the changes continually brought about in it, both by natural agents, and by the hand of man. Nor can the effect of this last be deemed unimportant, if we consider the many common processes, such as the felling of forests, ploughing, reaping, and irrigating, which are going on, at all times, more or less, over large tracts of country? Let us suppose it possible that a local irregularity of some kind might interrupt the operation of the cause—say (for instance) to such a degree, that the shower, which should have fallen with us, fell 5, or 50, or 500 miles distant from us; then, if, instead of the results of a single rain-gauge or a single barometer, we could measure the amount of effect produced over an extensive surface of the earth, we might the more reasonably hope to obtain some approximation towards a regular succession of phenomena, in proportion as we were thus enabled to obviate the effects of disturbing causes. It occurred from this, that, in a country where the harvest depended almost entirely upon the quantity of rain that fell, the prices of grain in past years (the averages being taken as extensively as possible) might indicate, though imperfectly, a regular succession of the seasons, as far as drought and moisture were concerned; provided, of course, that such a regular succession had actually taken place.

This idea may appear so strange to many, especially to those who are not acquainted with the interior of India, that it may be as well to give it a little further consideration.

It must be familiar to every one that parts of the ancient world, such as Egypt and Judea, were subject at different times to famines

consequent upon drought. These are not uncommon at the present day in low latitudes. In *Australia*, for instance, 'frightful droughts occur in cycles of 9 or 10 years,'—(see *Westminster Review*, No. 45, July 1835, p. 223, and again p. 224;) and that such always have occurred in India, the history of the country abundantly shews. Perhaps the most remarkable one upon record is that which took place in Bengal in the year 1770. (See MILL'S *History* for the particulars of this.) Now we have in the 1st vol. of the *Gleanings*, a list of the prices of different kinds of grain at *Chinsurah* in *Bengal*, from which we find that, in that year, rice was so dear that only 3 seers of it were sold for 1 rupee. If we examine this list further, we shall see that from the year 1733, the years of scarcity, or minimum quantity, and the intervals between them, were as follow:—

Years, . . . 1733 . . . 1752 . . . 1770 . . . 1788 . . . 1807.

Intervals, . . . 19 . . . . . 18 . . . . . 18 . . . . . 19.

If we add to the upper line, 1826, we have altogether 5 intervals of between 18 and 19 years for the recurrence of scarcities in Bengal. From 1733 to 1826 is 93 years, which divided by 5 gives  $18\frac{3}{5}$  years. There are some, but faint, traces of scarcities intermediate to these. We must remember that  $18\frac{3}{5}$  years is very nearly the duration of the Lunar Cycle.

Having proceeded thus far, we next ascertained by inquiry the dates of the principal scarcities that had occurred in the upper provinces within the memory of man. They are—

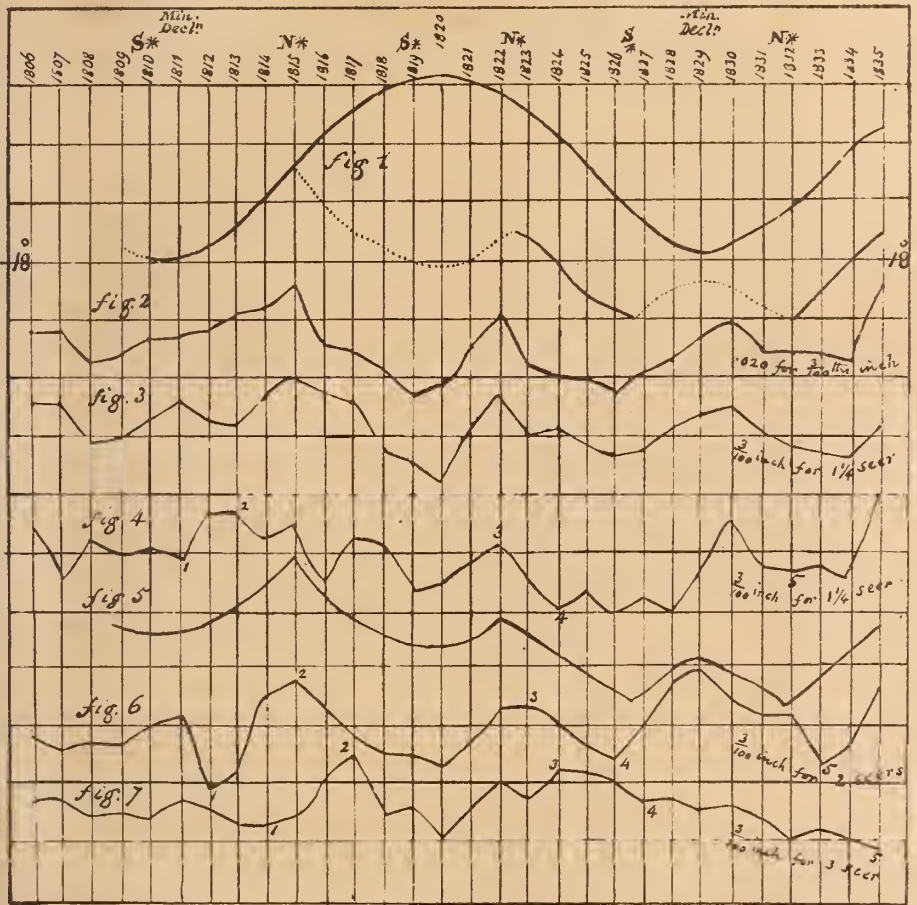
1782-3—1792-3—1802-3—1812-13—1819-20—1826—1832-3.

It will be observed that the recurrences here are nearly twice as frequent as in the former case.

The year 1829 being the year of minimum declination, the years corresponding to it in the previous cycles will be 1811 and 1792; and 1820 being the year of maximum declination, the years corresponding to it in the previous cycles will be 1802 and 1783. Thus we have a scarcity in each year of maximum declination, besides another on, or close upon, the year of minimum declination, and in the case of 1829 a double one, viz. 1826 and 1832. We shall revert to this presently.

On obtaining one or two lists of the prices of corn, it was found, as might be expected, that these were the years when the least quantity was sold for a given sum; and that, intervening, about midway, were years of extraordinary plenty, when the greatest abundance every where prevailed. So that it appeared as if the prices would form a curve of which the maxima and minima recurred at fixed intervals of

Variations of the Moon's Declination, and of the price of Grain.



Rev. R. Everest del.

Head of a Snake killed at Cuttack. I. K. Kittoe

COLUBER MYGTERIZANS ?



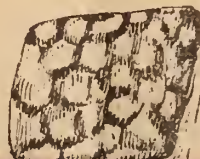
Abdominal plates 185

Caudal 280.



M. Kittoe del.

2<sup>nd</sup> Fossil Bone from Fort Boring, 361. ft.





nearly 9 years. Still, on considering the many causes, both natural as well as produced by human means, which must operate in determining the price of corn, we could not believe it probable that the indication of one, or even of a few lists, were to be depended upon. To obviate, therefore, local irregularities of every kind, it was thought necessary to procure lists of prices from as many places as possible,—lists specifying in detail the prices of four of the principal varieties of corn grown in the neighbourhood (two of the summer, and two of the winter crops), and, as in the *Chinsurah* list in the *Gleanings*, the number of seers sold for one rupee was to be mentioned in each case. Lists of this sort were obtained from *twenty-two* of the principal towns within 200 miles on each side of *Delhi*, *Lodiana*, and *Hansi*; *Bareilly* and *Agra* being the extremes. They all agree very nearly in the principal maxima and minima, and, as they were furnished by different persons who had no communication with each other, their joint result cannot well be ascribed to the errors of copyists, or, indeed, to incorrectness of any kind. The average of all these was taken (four kinds of corn at each place) for each year; the mean price for the season being thus settled by 88 items.

The series thus obtained we shall call our north-west line. Three lists (four kinds of corn in each) were obtained from *Bengal*, and the average of them taken for the *Bengal* line. Two lists (also four kinds of corn) were obtained from the neighbourhood of *Benares*, and the average of them taken for the *Benares* line. The average, then, of the three lines thus formed was taken for a general line.

To connect the variations in this general line with the declination of the moon, we must have recourse to the supposition that the variation is for a series of years direct with the declination, and then for a series, inverse with it,—a supposition for which no reason can be assigned, but which will appear the less improbable, if we recollect a circumstance stated in a previous paper, viz. that the variations of the barometer, either in excess or defect of the mean, increased with the increase of declination.

This connection, or assumed connection, may be most readily shewn thus. Let us first trace upon paper the progress of the moon in declination in different years in this manner. Draw a number of vertical lines at equal intervals (Plate XXII.) to represent the years in succession from 1810 to 1835 (both inclusive). Take out of the Nautical Almanack the highest declination to be found in the month of July in each year, and mark that height upon the vertical line corresponding to the year at any fixed rate, (as 0.1 inch) for each degree that it is above



18°. When you have marked all the heights, join them, and you have the upper, or continuous line, fig. 1. The lower or dotted line in fig. 1, where it separates from the upper,—is formed from it, by substituting for the increments, equal decrements, so as to be exactly the inverse of it. Where this lower line again changes to a continuous one, it runs parallel (or varies directly) with the upper one, and again, where it changes to a dotted one, becomes the inverse of it. It is this lower line, partly direct, partly inverse with the upper, that appears to be the type of the variation of the seasons. As a proof of this, we subjoin below (fig. 2) the general average line of variation in the prices of corn during the same period. This line was thus formed. The three principal lines, the north-west, the *Benares*, and the *Bengal*, were first formed from the average of the different lists. When the maximum and minimum number in each line within the last 85 years (since 1750), were noted, and the difference between them reckoned as the whole amount of variation. This amount was divided into 1000 parts, and, for the actual number in each line, the proportionate parts of the variation were substituted. The average was then taken of the 3 lines, and this is the line expressed in fig. 2, which is there traced upon the paper at the rate of .020 parts of variation for  $\frac{1}{50}$ th of an inch. The lowest line (fig. 3) is the general average, simply taken, of the principal lines, without any previous division of the variation into centesimal parts. A fourth, or southern line, was in this case included in the average, having been formed from prices at *Jubulpoor* (two kinds of corn), at *Bhopaul* (three kinds of corn), at *Indore* (two kinds of corn). But as the country in that direction was during part of the time the seat of war, and has been generally subject to unsettled government, and moreover the returns are not numerous, no great dependance can be placed upon it. In fact, the indications given by the north-west series are much more to be relied on than those of the others, owing to the more extensive induction.

In the last paper on this subject we noticed that there were certain years in which, about the solstices, the perigee of the moon fell on the same day with her maximum declination, either north or south, and that these were commonly extreme years, both of drought and moisture. These years are marked thus in the Chart N.\* and S.\* according as the declination is north or south, and it would appear on referring to the figures that these are usually the extreme years both of plenty and scarcity. They appear also to be the periods at which the variation changes from direct to inverse.

The maxima and minima by the *Calcutta* rain-guage since 1820, are

|      |      |      |       |
|------|------|------|-------|
| 1823 | 1826 | 1832 | 1835. |
| +    | —    | —    | +     |

These results do not differ from those afforded by the average of corn prices (figs. 2 and 3), more than the prices obtained from any one place differ from the general average. The results of registers kept in other places do not show so good an agreement; but the three principal ones we can refer to are those of *Macao*, *Madras* and *Bombay*; all places on the sea-coast, where rain seems to fall more irregularly than elsewhere. If it be asked, why, with the anomalies that still exist in the lines (figs. 2, and 3), we have presumed the upper line (fig. 1) to be the type of them, we answer that that line was formed after seeing the three or four lists of corn prices that first came to hand, and that every successive list received helped to approximate them more closely; the inference, therefore, is only fair, that still further lists obtained would diminish the irregularities at present existing, though we could not hope to obtain an exact parallelism, unless we were previously enabled to apply corrections for the many other causes that must affect the prices of corn. If we refer to the line (fig. 1) which we have assumed as the type of the variation, we shall perceive that on each side of the year 1829 a small inverse, or dotted piece exists: on looking back over the lists of prices, some of which extend as far back as 1700, I do not think that this small inverse piece is interpolated or intercalated, if I may so call it, oftener than every third cycle. With this exception, the variation appears to be direct for about 9 years, and then inverse for the same period. Thus from 1815 backwards, the variations are 9 years directly to 1806—9 years inversely to 1797—9 years directly to 1788, and 9 years inversely to 1779. Then from 1779 a variation is inserted similar to that between 1836 and 1823, up to 1767 or 1766; and again backward from that, periodical curves of 9 years in duration appear to occur as before. On this I shall crave permission to speak more hereafter, when, by the obtaining further lists of prices from different places, I may be enabled to correct those which I at present possess. For this reason I have refrained from carrying the present investigation further back than 1806. I beg at the same time to return my grateful thanks to those who have already assisted me with lists of prices. On looking over the lists it appeared that in those from particular quarters the maxima and minima occurred a year or two too soon, in other places a year or two too late for the supposition. To elucidate this, the lines, figs. 4, 5, 6, and 7, were drawn. Of these, fig. 5 is the type,

being the same as the lower line, fig. 1. Fig. 4, or the *Bengal* line, appears to have its maxima and minima, generally speaking, somewhat earlier than the fictitious line :—fig. 6, or the north-west line, has them somewhat too late, and fig. 7, or the southern line, still later. A fact somewhat analogous to this is observed in Europe where the variations of the barometer are said to take place on the shore of the *Atlantic* a day and a half earlier than at *St. Petersburg*; but in neither case is the difference regular. However, all the information of every kind that I can gather on the subject would lead to the belief that the changes generally do take place earlier towards the northern and eastern parts of the country, later towards the southern and western. I am speaking, of course, of Northern India, having as yet no lists from the south of the *Nerbudda*.

I have not endeavoured to connect the appearances observed with the position of the moon, unaware of the difficulties which attend such a supposition, but because I was at a loss to find one which would account for the phenomena better. As to the appearances themselves, the variations in the price of corn and their recurrences, they of course will rest upon better or worse evidence in proportion as the multiplication of lists from different parts of the country confirm, or not, the indications they afford. From the nature of the subject, much accuracy in the conclusions cannot be hoped for: nevertheless by perseverance some truths may be elicited, which may serve to direct philosophical research, and perhaps to give us some insight into what is likely to happen for the future, in the absence of all better information.

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#### V.—On the Climate of Darjiling.

We make an exception to our general rule of not inserting meteorological registers except in abstract, in favor of the following six months' diary kept by Doctor CHAPMAN at the new station of *Darjiling* in the *Sikkim* portion of the *Sub-Himálayan* range, because it is very important that every information should be made public in regard to the climate of a place selected, or at least proposed, as a sanatorium for the recruiting of exhausted Bengálí constitutions, more accessible than the far western hills of *Simla* and *Masúrí*, or the eastern station of *Chirra Punjí*.

Before Doctor CHAPMAN started on his official deputation to *Darjiling*, his instruments were carefully compared with the standards registered in this Journal. He was particularly requested to attend to the wet-bulb depression, as compared with the dew point; and to the

boiling point of water, as compared with the barometric indications. As his thermometer for the latter object was only divided to 2°, we have since despatched a new one of greater sensibility, whence we hope soon to obtain valuable data for the correction of the usual tables for the measurement of heights by the thermometer. The dew points noted are curious, sometimes higher than the wet bulb or evaporation point. Can this arise from an error in the DANIELL'S hygrometer? We have always found a little iced water added drop by drop to a little common water in a highly polished gilded silver cup, the most trust-worthy mode of taking the dew point. It can be depended on to the tenth of a degree.

Upon the strength of our observations in the December Journal we may, with confidence, calculate the altitude of *Titalya*, and *Darjiling* from the three months' observations of October, December, and January\*. Thus applying the constant correction of—.004 to Dr. CHAPMAN'S Bar. A, we have

|  | <i>Calcutta.</i>                         | <i>Titalya.</i> | <i>deduced.</i> |
|--|--|-----------------|-----------------|
| Corrected heights of the Barometer at 8½ A. M. . . . . | 29.894                                   | 29.626          | ft. 255.7       |
| mean temperature of air 75°, . . . . .                 |  |                 |                 |
| At 4½ P. M., ditto, 84.5, . . . . .                    | 29.815                                   | 29.514          | 293.5           |
|  | Average altitude of <i>Titalya</i> , ft. |                 | <u>275.0</u>    |

For *Darjiling* the data are more numerous :

|                         | <i>Calcutta.</i> |              | <i>Darjiling.</i> |              | <i>Altitude.</i>   |
|-------------------------|------------------|--------------|-------------------|--------------|--------------------|
|                         | <i>Barom.</i>    | <i>Temp.</i> | <i>Barom.</i>     | <i>Temp.</i> | <i>calculated.</i> |
| Dec. 1836, obs. 9 A. M. | 30.098           | 68.0         | 23.367            | 44.6         | 6925.1             |
| Ditto, ————— 5 P. M.    | 29.989           | 75.          | 23.298            | 47.6         | 6973.1             |
| Jan. 1837, obs. 9 A. M. | 30.073           | 68.          | 23.322            | 42.1         | 6942.2             |
| Ditto, ————— 5 P. M.    | 29.970           | 75.          | 23.247            | 43.4         | <u>6989.9</u>      |

Mean altitude by 120 obs. of the Barometer, ft. 6957.5

The altitude of *Darjiling* hill by two observations of Capt. HERBERT, published with his report in the *Gleanings of Science*, is 7218 feet, or 250 feet higher than Dr. CHAPMAN'S house. The altitude deducible from the thermometric indication of boiling water is only 6648.5 : but little confidence is to be placed in the latter without a very accurate instrument. It is to be remarked also, that the barometric measure will shew a much closer agreement when not corrected by the multiplier for the assumed mean temperature of the stratum of air between the two stations, Unconnected they stand thus: 6595.8, 6578.4, 6624.6, and 6619.2; the maximum discrepancy from the mean 6604.5 being only 26 feet. A numerous series of barometrical results from similar tables will enable us to form a more correct appreciation of the influence of variations of temperature on the formula. N. B. The barometric heights above stated have been all reduced to 32°.

\* We have since received the registers for February and March, which we insert, deferring observations till the series is completed.



Meteorological Register kept at Titilya, for the month of October, 1836.

| Barometer A. |             | Thermometer in the Air. |             | Regtg. Ther. |      | Wind.       |             | App. of Sky. |            |         |
|--------------|-------------|-------------------------|-------------|--------------|------|-------------|-------------|--------------|------------|---------|
| 8 1/2 A. M.  | 4 1/2 P. M. | 8 1/2 A. M.             | 4 1/2 P. M. | Min.         | Max. | 8 1/2 A. M. | 4 1/2 P. M. | 8 1/2 A. M.  | 4 P. M.    |         |
| 1            | 29.506      | .463                    | .5          | 69           | 73   | 4.53        | E. N. E.    | N. E.        | Rain.      | Rain.   |
| 2            | .592        | .541                    | .5          | 70           | 82.5 | 1           | N. E.       | W. S. W.     | ditto      | Cum.    |
| 3            | .576        | .533                    | .5          | 84           | 84   | ..          | W.          | S. W.        | Fog.       | Clear.  |
| 4            | .672        | .583                    | 2.5         | 70           | 85.5 | ..          | N. E.       | S. W.        | Cirri.     | Few Cum |
| 5            | .712        | .630                    | 4.5         | 66.5         | 83.5 | ..          | N. E.       | Calm.        | ditto.     | Clear.  |
| 6            | .740        | .664                    | 3.5         | 70.5         | 85   | ..          | N. E.       | W.           | Cum.       | ditto   |
| 7            | .776        | .673                    | 6.5         | 68           | 87   | ..          | E. N. E.    | W.           | Clear.     | ditto   |
| 8            | .792        | .615                    | 6.          | 66           | 87   | ..          | N. E.       | W.           | ditto      | ditto   |
| 9            | .727        | .652                    | 4.5         | 66           | 88   | ..          | N. E.       | Calm.        | ditto      | ditto   |
| 10           | .754        | .672                    | 5.          | 67           | 88   | ..          | E.          | W.           | ditto      | ditto   |
| 11           | .768        | .695                    | 5.5         | 68           | 88   | ..          | N. E.       | W.           | ditto      | ditto   |
| 12           | .763        | .648                    | 4.5         | 69           | 87   | ..          | E. N. E.    | W.           | ditto      | ditto   |
| 13           | .742        | .684                    | 7           | 70.5         | 88   | ..          | N. E.       | W.           | ditto      | ditto   |
| 14           | .738        | .662                    | 3.          | 69           | 85.5 | ..          | E.          | W.           | do fog ear | ditto   |
| 15           | .690        | .653                    | 2.5         | 64           | 84.5 | ..          | W.          | W.           | do. do.    | Cum.    |
| 16           | .723        | .660                    | 3.          | 62.5         | 81   | ..          | E.          | S. W.        | Few cum    | Clear.  |
| 17           | .792        | .713                    | 3.          | 64           | 82   | ..          | N. E.       | E. S. E.     | ditto      | ditto   |
| 18           | .805        | .722                    | 3.5         | 65           | 83   | ..          | N. N. E.    | N. E.        | Clear.     | ditto   |
| 19           | .802        | .727                    | 6.5         | 65           | 83.5 | ..          | N. E.       | S. W.        | ditto      | ditto   |
| 20           | .826        | .762                    | 3.5         | 65           | 83   | ..          | E. N. E.    | W.           | Cirri.     | ditto   |
| 21           | .837        | .782                    | 4.5         | 64           | 83   | ..          | N. E.       | W.           | Clear.     | ditto   |
| 22           | .883        | .770                    | 7           | 63.5         | 83   | ..          | N. E.       | W.           | ditto      | ditto   |
| 23           | .820        | .727                    | 7           | 63           | 83   | ..          | E. N. E.    | W.           | ditto      | ditto   |
| 24           | .797        | .694                    | 6.5         | 64           | 82.5 | ..          | E. N. E.    | W.           | ditto      | ditto   |
| 25           | .820        | .740                    | 4.5         | 64           | 83.5 | ..          | E. N. E.    | W.           | ditto      | ditto   |
| 26           | .808        | .713                    | 4.          | 64           | 82   | ..          | N. N. E.    | S. E.        | ditto      | ditto   |
| 27           | .783        | .700                    | 4.5         | 63           | 84.5 | ..          | N.          | Calm.        | ditto      | ditto   |
| 28           | .780        | .690                    | 4.5         | 65           | 85   | ..          | N. E.       | S.           | ditto      | ditto   |
| 29           | .782        | .664                    | 4.          | 66           | 85   | ..          | N.          | Calm.        | ditto      | ditto   |
| 30           | .768        | .682                    | 4.5         | 67           | 83.5 | ..          | E.          | S. E.        | Cirri.     | Cirri.  |
| 31           | .778        | .666                    | 3.          | 68           | 78.5 | ..          | N. E.       | E. N. E.     | Cum.       | Cum.    |
| Means,       | 29.750      | .670                    | 4.2         | 66.4         | 83.9 |             |             |              |            |         |

October 6th, 2 P. M. Thermometer in air 84°. Moistened bulb 79°. Dew-point by Daniell's Hygrometer 72°.  
 October 7th, 1 P. M. Therm. 85, Moist. bulb 79°. Dew-point by Hyg. 73°.  
 October 14th, 1 P. M. Therm. 84, Moist. bb. 73.5 Dew-point by Hyg. 75°. Water boils 211.24. Barometer 29.700.  
 October 19th, 1 P. M. Therm. 83, Moist. bb. 69.5 Dew-point by Hyg. 69°. Water bis. 211.5 Br. 29.770  
 October 21st, 1 P. M. Therm. 83, Moist. bb. 69°. Dew-point by Hyg. 68°. Water boils 21.29, Br. 29.800  
 October 31st, 1 P. M. Ther. 77, Moist. bulb 70°. Dew-point by Hyg. 71°. Water boils 211.5, Barometer 29.736.



Meteorological Register for the month of November, 1836, kept at Titalya and elsewhere.

| Observations made at | Barometer A.  |          |          | Thermometer in the Air. |          |          | Regtg. Ther. |      | Wind.    |          | Weather.        |            | Boiling Point at 8½ A. M. |
|----------------------|---|----------|----------|-------------------------|----------|----------|--------------|------|----------|----------|-----------------|------------|---------------------------|
|                      | 8½ A. M.  | 4½ P. M. | 4½ A. M. | 8½ A. M.                | 4½ P. M. | 4½ P. M. | Min.         | Max. | Morn.    | Even.    | Morn.           | Even.      |                           |
|                      | Depression of the moistened bulb. 8½ A. M. 4½ P. M. |          |          |                         |          |          |              |      |          |          |                 |            |                           |
| Titalya,             | 1 29.742  | 29.644   | 70       | 79.5                    | 3        | 9.5      | 65           | 80.5 | E.       | W. S. W. | Cum.            | Cum.       | 207.6                     |
| Ditto,               | 2 .640  | .520     | 70.5     | 80.5                    | 4        | 11.5     | 65           | 81.5 | N. E.    | W.       | ditto           | Clear.     | 207.4                     |
| Ditto,               | 3 .616  | .544     | 67       | 78                      | 3        | 12.5     | 63           | 81.5 | Calm.    | W.       | Fog, early clr. | do.        | 207.2                     |
| Ditto,               | 4 .737  | .686     | 63.5     | 80.5                    | 2.5      | 16       | 59           | 81.5 | N. W.    | W.       | ditto           | ditto.     | 207.4                     |
| Ditto,               | 5 .804  | .749     | 69       | 80.5                    | 4.5      | 13       | 63           | 81.5 | E. N. E. | W. S. W. | Clear. Frags.   | cum.       | 207.6                     |
| Ditto,               | 6 .820  | .690     | 69       | 81                      | 5        | 12.5     | 61           | 82   | E. N. E. | S. S. W. | ditto           | Clear.     | 201.0                     |
| Ditto,               | 7 .760  | .692     | 68       | 81                      | 3.5      | 13       | 62           | 82   | E.       | S.       | Overcast        | ditto.     | 201.2                     |
| Ditto,               | 8 .897  | .748     | 63.5     | 79                      | 5        | 12       | 61           | 81   | E.       | W.       | Clear.          | ditto.     | 201.5                     |
| Ditto,               | 9 .846  | .754     | 69       | 79.5                    | 6        | 10       | 60.5         | 80.5 | N. E.    | Calm.    | ditto           | ditto.     | 201.8                     |
| Ditto,               | 10 .771   | .700     | 67       | 80                      | 5        | 11.5     | 61           | 83   | F. N. E. | ditto.   | ditto           | ditto.     | 209.0                     |
| Ditto,               | 11 .793   | ..       | 66       | ..                      | 6        | ..       | 60.5         | ..   | N. E.    | ..       | ditto           | ditto.     | 209.0                     |
| Rance Dangah,...     | 12 .720   | ..       | 65       | ..                      | ..       | ..       | 61           | ..   | N. E.    | ..       | ditto           | ditto.     | 210.6                     |
| Teprah Munuf,...     | 13 .056   | 28.960   | 64       | 69.5                    | 6        | 7.5      | 60           | 78   | N.       | N.       | ditto           | ditto.     | 209.0                     |
| Ditto,               | 14 .060   | .940     | 66       | 70                      | 9.5      | 8        | 60           | 78   | N.       | N.       | ditto           | ditto.     | 209.2                     |
| Ditto,               | 15 28.978   | ..       | 63       | ..                      | 8        | ..       | 60           | ..   | N.       | ..       | ditto           | ditto.     | 209.0                     |
| Dimal Golah,         | 16 .231   | .146     | 61       | 66.5                    | 4        | 5.5      | 55           | 71   | N. N. W. | S. W.    | Cum.            | Heavy cum. | 210.6                     |
| Ditto,               | 17 .204   | .128     | 60       | 69                      | 5        | 6.5      | 54.5         | 72   | N.       | Calm.    | ditto           | ditto.     | 209.0                     |
| Ditto,               | 18 .229   | .155     | 60       | 66                      | 4        | 5        | 54           | 70   | N.       | N.       | ditto           | ditto.     | 209.2                     |
| Ditto,               | 19 .226   | .141     | 60       | 68                      | 5.5      | 6        | 52           | 72.5 | E.       | W. S. W. | Clear.          | ditto.     | 209.0                     |
| Ditto,               | 20 .200   | ..       | 58       | ..                      | 4        | ..       | 53.5         | ..   | N. W.    | ..       | Frags cum.      | ..         | 207.6                     |
| Samdong,             | 21 27.169   | 27.070   | 57       | 62                      | 3        | 3.5      | 48           | 70.5 | Calm.    | S. W.    | Cirri.          | Overcast.  | 207.4                     |
| Ditto,               | 22 .185   | .100     | 58       | 63                      | 3        | 5        | 50           | 73   | N.       | N. W.    | Clear.          | ditto.     | 207.2                     |
| Ditto,               | 23 .160   | .053     | 57       | 64                      | 2.5      | 5        | 46           | 70   | N.       | S.       | ditto           | ditto.     | 207.4                     |
| Ditto,               | 24 .150   | .073     | 57       | 64                      | 3        | 4.5      | 47           | 73.5 | N. W.    | N. W.    | Cirri.          | Cumuli.    | 207.6                     |
| Ditto,               | 25 .135   | ..       | 54       | ..                      | 3        | ..       | 46           | ..   | N. E.    | ..       | Clear.          | ..         | 201.0                     |
| Tkie Bong,           | 26 24.000   | 23.960   | 45       | 54                      | 10       | 7        | 37           | 58   | N. E.    | S. W.    | Bright.         | Clear.     | 201.2                     |
| Ditto,               | 27 .073   | 24.054   | 46       | 55                      | 6.5      | 7        | 40           | 60   | N. N. E. | S.       | ditto           | Bright.    | 201.5                     |
| Ditto,               | 28 .137   | .094     | 46       | 54.5                    | 7        | 4.5      | 40           | 61   | N. E.    | S.       | ditto           | Misty.     | 201.8                     |
| Ditto,               | 29 .140   | .079     | 47       | 52                      | 4        | 5.       | 40           | 59.5 | E.       | S. W.    | Misty to S.     | ditto.     | 202.0                     |
| Ditto,               | 30 .126   | .071     | 49       | 50.5                    | 5.5      | 5.       | 42           | 56   | S. W.    | S.       | Hazy.           | Cumuli.    | 202.0                     |

Meteorological Register kept at Darjiling, for the month of December, 1836.

| 1      | Barometer A. |         | Thermometer in the Air. |         |                            | Regtg. Ther. |       | Rain. Inches | Snow. | Wind.       |          | Appearance of Sky.           |                | Boiling Point at 9 A. M. |
|--------|--------------|---------|-------------------------|---------|----------------------------|--------------|-------|--------------|-------|-------------|----------|------------------------------|----------------|--------------------------|
|        | 9 A. M.      | 5 P. M. | 9 A. M.                 | 5 P. M. | Depression of moist. bulb. |              | Morn. |              |       | Even.       | Morn.    | Evening.                     |                |                          |
|        |              |         |                         |         | A. M.                      | P. M.        |       |              |       |             |          |                              | Min.           |                          |
| 1      | ..           | ..      | ..                      | ..      | ..                         | ..           | ..    | ..           | ..    | ..          | ..       | ..                           | ..             | ..                       |
| 2      | ..           | ..      | ..                      | ..      | ..                         | ..           | ..    | ..           | ..    | ..          | ..       | ..                           | ..             | ..                       |
| 3      | 23.386       | 23.329  | 47                      | 46.5    | 6                          | 6.5          | 33    | 51           | Rain. | N. E.       | S. E.    | Fragts. cumuli.              | Nimbi.         | 200.5                    |
| 4      | 3.48         | 3.08    | 43                      | 43      | 5                          | 5            | 36    | 48           | ditto | N. W.       | N. W.    | Overcast.                    | Overcast.      | 199.8                    |
| 5      | ..           | ..      | 44                      | 44      | 6                          | 5            | 34    | 48           | ditto | E.          | E.       | ditto                        | ditto.         | 199.5                    |
| 6      | 4.30         | 3.94    | 42.5                    | 43      | 4                          | 4.5          | 35    | 47.5         | Snow. | N.          | N.       | ditto                        | Cumuli.        | 200.0                    |
| 7      | 4.83         | 4.30    | 43                      | 47      | 8                          | 9            | 33    | 50           | ..    | E.          | N. W.    | Clear.                       | Clear.         | 200.3                    |
| 8      | 4.83         | 4.40    | 44                      | 50      | 9                          | 8.5          | 34    | 54           | ..    | N.          | E.       | Bright all day.              | ditto          | 200.2                    |
| 9      | 4.75         | 4.23    | 46                      | 51      | 7                          | 9            | 35    | 54.5         | ..    | W.          | W.       | ditto                        | Few cirri.     | 200.2                    |
| 10     | 4.43         | 3.98    | 44                      | 51      | 11                         | 9            | 36    | 53           | ..    | W.          | S. W.    | Clear.                       | Cirri.         | 200.0                    |
| 11     | 4.03         | 3.58    | 45                      | 50      | 8                          | 11           | 35.5  | 53           | ..    | Calin.      | W.       | ditto                        | Clear all day. | 199.7                    |
| 12     | 3.73         | 3.33    | 43                      | 49.5    | 7.5                        | 10           | 36    | 51.5         | ..    | N.          | W.       | Clear all day.               | Few cumuli.    | 200.0                    |
| 13     | 3.93         | 3.32    | 42.5                    | 45.5    | 5                          | 7.5          | 35.5  | 51.5         | ..    | N. E.       | N. W.    | Few light cumuli.            | Cirri.         | 199.5                    |
| 14     | 3.68         | 3.17    | 45                      | 50.5    | 8                          | 8.5          | 36.5  | 56           | ..    | W.          | N. E.    | Overcast, cly. all day.      | Overcast.      | 199.7                    |
| 15     | 3.71         | 3.20    | 42.5                    | 46      | 5                          | 6            | 36.5  | 51.5         | ..    | W.          | W.       | Clear all day.               | Overcast.      | 200.0                    |
| 16     | 4.00         | 3.14    | 45.5                    | 51      | 9                          | 10           | 32.5  | 54           | ..    | N.          | W.       | ditto                        | ditto          | 199.7                    |
| 17     | 3.86         | 2.96    | 46                      | 50      | 8                          | 9            | 33    | 53           | ..    | N.          | Calin.   | ditto                        | ditto          | 200.0                    |
| 18     | 3.92         | 3.41    | 46                      | 52      | 12                         | 9.5          | 34    | 53           | ..    | W. N. W.    | W. N. W. | ditto                        | ditto          | 200.0                    |
| 19     | 4.54         | 3.70    | 47                      | 52      | 10                         | 9            | 35.5  | 54           | ..    | N. E.       | Calin.   | Clear, a few clouds at noon. | Clear.         | 199.8                    |
| 20     | 3.92         | 3.12    | 52                      | 51      | 9                          | 7            | 35.5  | 54           | ..    | S.          | S.       | Overcast, cloudy all day.    | Overcast.      | 199.8                    |
| 21     | 3.35         | 3.03    | 45.5                    | 48      | 5.5                        | 5            | 36.5  | 53.5         | ..    | E.          | S. S. W. | Overcast, misty all day.     | Overcast.      | 200.0                    |
| 22     | 3.41         | 2.89    | 45                      | 46      | 6                          | 5.5          | 38    | 50.5         | ..    | W. S. W.    | S. W.    | Few cumuli.                  | Overcast.      | 200.0                    |
| 23     | 3.96         | 2.54    | 44                      | 49      | 7                          | 7.5          | 33    | 52           | ..    | W. S. W.    | W. S. W. | Cumuli.                      | Cumuli.        | 200.2                    |
| 24     | 3.30         | 2.70    | 46                      | 45      | 4                          | 4            | 33.1  | 48.5         | ..    | Calin.      | N.       | Overcast.                    | Overcast.      | 200.0                    |
| 25     | 3.42         | 2.74    | 41                      | 42      | 4                          | 4            | 35    | 50           | ..    | N. N. E.    | N.       | Clear all day.               | Few cum.       | 200.0                    |
| 26     | 3.43         | 2.88    | 43                      | 46      | 5                          | 8.5          | 34    | 49           | ..    | N. W. S. W. | W. S. W. | Fragts. cum. do., 1/4 day.   | Clear.         | 200.0                    |
| 27     | 3.86         | 3.24    | 44                      | 48      | 5                          | 7            | 34    | 50           | ..    | N. N. E.    | S. W.    | Cumuli.                      | Clear.         | 200.2                    |
| 28     | 4.12         | 3.56    | 41                      | 45.5    | 6                          | 7            | 34    | 51           | ..    | S.          | W.       | Bright all day.              | Overcast.      | 200.2                    |
| 29     | 4.80         | 4.12    | 41                      | 48      | 5.5                        | 7            | 34    | 51           | ..    | N. N. E.    | Calin.   | Clear all day.               | Overcast.      | 200.0                    |
| 30     | 4.52         | 3.20    | 51                      | 49      | 18                         | 9            | 33.5  | 55           | ..    | N.          | S. W.    | Clear.                       | Overcast.      | 200.2                    |
| 31     | 3.31         | 2.25    | 46                      | 43      | 8                          | 5.5          | 34    | 50.5         | ..    | S.          | S. W.    | Bright all day.              | Overcast.      | 200.0                    |
| 23.396 | ..           | ..      | 44.6                    | 47.6    | 7.3                        | 7.6          | 34.9  | 51.6         | ..    | ..          | ..       | ..                           | ..             | 200.0                    |

3rd, 4th, and 5th. Distant thunder in the afternoon and light showers during the nights; quantity of rain not measured.

6th. A few flakes of snow fell about 2 P. M. To the W. and N. W. heavy snow showers.

30th. Depression of moistened bulb Thermometer at 9 A. M. 18°. Dew-point of Hygrometer 29°. Min. Temp. during the night, 38.5.

Ice above 1/2 an inch thick in the morning.

Hoar frost and ice every morning, excepting 15th, 20th, 21st, 22nd, and 24th.

Meteorological Register kept at Darjiling, for the month of January, 1837.

| Barometer A. |         |         |         | Thermometers in the Air. |         |         |         | Regtg. Ther. |      | Snow.  |    | Wind.       |          | Appearance of Sky.                       |                     | Boiling Point at 9 A. M. |
|--------------|---------|---------|---------|--------------------------|---------|---------|---------|--------------|------|--------|----|-------------|----------|--|---------------------|--------------------------|
| 9 A. M.      | 5 P. M. | 9 A. M. | 5 P. M. | 9 P. M.                  | 5 P. M. | 9 P. M. | 5 P. M. | Min.         | Max. | Inches |    | Morn.       | Even.    | Morning.                                 | Evening.            |                          |
| 1 23.333     | 23.272  | 43      | 42.5    | 5                        | 5.5     | 34      | 50.5    | ..           | ..   | ..     | .. | Calm.       | W.!      | Cumuli, cloudy all day.                  | Overcast.           | 200.0                    |
| 2 32.323     | 23.3    | 42      | 42.5    | 6                        | 5.5     | 34      | 46.5    | ..           | ..   | ..     | .. | ditto       | Calm.    | Cumuli ditto.                            | Cumuli.             | 199.8                    |
| 3 3.10       | 29.3    | 40.5    | 45      | 7                        | 7.5     | 32.5    | 49.5    | ..           | ..   | ..     | .. | Calm.       | W.       | Clear all day.                           |                     | 199.8                    |
| 4 4.400      | 30.8    | 52      | 51      | 16                       | 17      | 36      | 54      | ..           | ..   | ..     | .. | Calm.       | ditto    | Bright all day.                          |                     | 200.0                    |
| 5 3.41       | 26.9    | 45.5    | 44      | 9                        | 8       | 39      | 56      | ..           | ..   | ..     | .. | N.          | ditto    | ditto do., very thick ice this night.    |                     | 200.2                    |
| 6 3.65       | 33.0    | 44      | 44      | 9                        | 6       | 34.5    | 51      | ..           | ..   | ..     | .. | S. W.       | ditto    | ditto ditto                              |                     | 200.0                    |
| 7 4.30       | 36.6    | 41.5    | 45      | 7                        | 6       | 33      | 48      | ..           | ..   | ..     | .. | W.          | ditto    | ditto ditto                              |                     | 200.0                    |
| 8 4.04       | 33.6    | 47      | 44      | 8.5                      | 5       | 34      | 50.5    | ..           | ..   | ..     | .. | W.          | ditto    | ditto ditto                              |                     | 200.0                    |
| 9 3.80       | 26.8    | 31      | 37.5    | *                        | 5.5*    | 31      | 37.5    | ..           | ..   | ..     | .. | W. N. W.    | E. N. E. | Hvy. sn. till after 12. Cr. & cr. strat. | Overcast.           | 200.0                    |
| 10 3.80      | 32.2    | 39      | 40      | 5                        | 2       | 29      | 45      | ..           | ..   | ..     | .. | N. E.       | Calm.    | Bright.                                  | Overcast.           | 200.0                    |
| 11 3.90      | 35.0    | 40      | 43      | 4                        | 3.5     | 31      | 45.5    | ..           | ..   | ..     | .. | S. S. E.    | N. W.    | Clear all day.                           | Overcast.           | 200.1                    |
| 12 4.04      | 31.6    | 38      | 41      | 3                        | 3       | 33      | 45      | ..           | ..   | ..     | .. | N.          | Calm.    | Few cum.                                 | Overcast.           | 200.0                    |
| 13 4.13      | 31.1    | 39      | 38      | 3                        | 2       | 31      | 41      | ..           | ..   | ..     | .. | N. N. E.    | ditto    | ditto                                    | ditto               | 200.0                    |
| 14 4.11      | 34.4    | 37      | 41      | 2.5                      | 2.5     | 30      | 43      | ..           | ..   | ..     | .. | N.          | W. S. W. | ditto                                    | Cumuli.             | 200.0                    |
| 15 4.12      | 34.8    | 42      | 46      | 4                        | 4       | 30      | 47.5    | ..           | ..   | ..     | .. | N. E. N. E. | ditto    | Few cr. Clr. S. & E. Ovrst. N. & W.      | Overcast.           | 200.0                    |
| 16 4.49      | 30.8    | 42      | 44      | 4                        | 3       | 32      | 47      | ..           | ..   | ..     | .. | S. W.       | W.       | Cirri.                                   | Overcast.           | 200.0                    |
| 17 3.91      | 30.8    | 42      | 44      | 4                        | 3       | 32      | 47      | ..           | ..   | ..     | .. | N. N. E.    | W.       | Clear all day.                           |                     | 200.0                    |
| 18 4.12      | 34.8    | 42      | 46      | 6                        | 4.5     | 31      | 50.5    | ..           | ..   | ..     | .. | Calm.       | W.       | Ovrst. clr. N. & N. W. Hzy cum. W.       | Overcast.           | 200.0                    |
| 19 3.91      | 26.8    | 40.5    | 43      | 2.5                      | 2       | 31.5    | 47      | ..           | ..   | ..     | .. | W.          | Calm.    | Overcast hazy W.                         | Misty.              | 199.8                    |
| 20 2.84      | 18.1    | 42.5    | 41      | 2.5                      | 1       | 34      | 42.5    | ..           | ..   | ..     | .. | S. S. E.    | N.       | Mist and haze.                           | Overcast & hazy.    | 199.8                    |
| 21 2.80      | 22.1    | 42      | 41      | 3                        | 3       | 34      | 46      | ..           | ..   | ..     | .. | Calm.       | W.       | ditto ditto                              | Mist.               | 199.8                    |
| 22 2.80      | 19.0    | 40      | 44      | 2                        | 2       | 33      | 46      | ..           | ..   | ..     | .. | W.          | Calm.    | Overcast and misty.                      | ditto               | 200.0                    |
| 23 2.78      | 23.2    | 45      | 45.5    | 2.5                      | 2.5     | 34      | 45.5    | ..           | ..   | ..     | .. | N.          | W.       | Fragts. cumuli.                          | ditto               | 199.5                    |
| 24 2.67      | 20.1    | 42      | 46.5    | 3                        | 2.5     | 34      | 48.5    | ..           | ..   | ..     | .. | N.          | W.       | Misty.                                   | Cumuli to W.        | 200.0                    |
| 25 2.73      | 22.0    | 44      | 47.5    | 2                        | 3.5     | 34.5    | 48.5    | ..           | ..   | ..     | .. | S. W.       | W. sqs   | Cumuli, hail and rain.                   | Clr. cum. N.        | 200.0                    |
| 26 2.68      | 20.8    | 44      | 44.5    | 3.5                      | 4.5     | 36      | 49      | .06          | ..   | ..     | .. | W.          | W.       | Clear.                                   | Clear.              | 199.5                    |
| 27 2.36      | 18.4    | 40      | 47      | 3                        | 0       | 33      | 51      | .09          | ..   | ..     | .. | N.          | Calm.    | Misty.                                   | Rain.               | 199.5                    |
| 28 2.32      | 19.2    | 40.5    | 40.5    | 2                        | 3.5     | 31      | 44      | .05          | ..   | ..     | .. | N.          | W.       | Clear.                                   | Overcast and misty. | 200.0                    |
| 29 3.70      | 30.1    | 40      | 43      | 3                        | 2       | 30      | 47.5    | ..           | ..   | ..     | .. | Calm.       | W.       | Few cumuli.                              | ditto ditto         | 200.3                    |
| 30 3.65      | 27.0    | 45      | 45      | 3                        | 3       | 33      | 43      | ..           | ..   | ..     | .. | N. E.       | Calm.    | Cum. and hazy.                           | Thick mist.         | 200.0                    |
| 31 3.50      | 23.4    | 40      | 40      | 2.5                      | 1.5     | 32      | 43      | ..           | ..   | ..     | .. | N. E.       | Calm.    |  |                     | 200.0                    |
| 32 3.35      | 23.273  | 42.1    | 43.1    | 4.9                      | 4.2     | 32.8    | 47.2    | 0.20         | ..   | ..     | .. | N. E.       | Calm.    |  |                     | 200.0                    |

10th. At 4 A. M. distant rumble from the S. At 5 A. M. severe thunder storm from S. with heavy snow shower. Snow continued to fall till noon, by which time the snow was not deep on the ground. Some snow remaining on the ground till the 24th.  
 \* The moistened muslin frozen. A clear frost and ice every morning, excepting the 1st and 21st.

*Meteorological Register kept at Darjiling, for February, 1837.*

| Barometer. |         |         |         | Thermometer in the Air. |         |         |         | Regtg. Ther. | Rain.     | Snow, &c. &c.           |          | Wind.   |                       | Appearance of Sky, &c. &c. |          | Boiling Point. |
|------------|---------|---------|---------|-------------------------|---------|---------|---------|--------------|-----------|-------------------------|----------|---|-----------------------|----------------------------|----------|----------------|
| 9 A. M.    | 5 P. M. | 9 A. M. | 5 P. M. | 9 A. M.                 | 5 P. M. | 9 A. M. | 5 P. M. |              |           | Depression moist. bulb. | Inches   | Morn.   | Even.                 | Morning.                   | Evening. |                |
| 1          | 23.344  | 23.284  | 43      | 42                      | 3       | 2       | 33      | 48           |           | Calm.                   | Calm.    | Overcast and haze.                            | Haze and mist.        | 200.0                      |          |                |
| 2          | 334     | 270     | 43.5    | 42.5                    | 4       | 2       | 34      | 48           |           | S. W.                   | ditto    | Cum. haze N. & E.                             | Cum. haze N.          | 200.0                      |          |                |
| 3          | 394     | 332     | 42.5    | 45.5                    | 3       | 3.5     | 33.5    | 48.5         |           | N. E.                   | W.       | Thick haz. & mist N. & E. S. Hz. N. cum. dis. | Cum. haze N.          | 200.3                      |          |                |
| 4          | 429     | 347     | 49.5    | 50.5                    | 6.5     | 6.5     | 34      | 53           |           | W.                      | S.       | Cum. disp. hazy N.                            | Cirri. haze, N.       | 200.6                      |          |                |
| 5          | 362     | 237     | 47.5    | 47                      | 3       | 5       | 33.5    | 52           |           | Calm.                   | W.       | ditto   | Hazy cum. S. and W.   | 200.2                      |          |                |
| 6          | 318     | 229     | 42      | 45                      | 5       | 2.5     | 34      | 52.5         |           | N.                      | W.       | Few cum. intersp.                             | Overcast.             | 200.0                      |          |                |
| 7          | 364     | 318     | 47      | 49                      | 4       | 5.5     | 35      | 53           |           | Calm.                   | W.       | Gen. clear, haze, N.                          | Hazy N. cum. S.       | 200.3                      |          |                |
| 8          | 416     | 350     | 43      | 48                      | 2       | 3       | 35      | 54.5         |           | W.                      | W.       | Cloudy, hazy N.                               | Cirri. horizon hazy.  | 200.5                      |          |                |
| 9          | 366     | 283     | 45.5    | 45.5                    | 3.5     | 1.5     | 37.5    | 52           |           | W.                      | W.       | ditto hazy near horizon.                      | Rain.                 | 200.2                      |          |                |
| 10         | 354     | 280     | 45      | 43.5                    | 2.5     | 2.5     | 36      | 48           | 0.04      | Var.                    | E.       | Horizon hazy.                                 | Cirri. cum. N.        | 200.3                      |          |                |
| 11         | 280     | 191     | 47      | 44                      | 5       | 1.5     | 37      | 48           | 0.19      | Squalls.                | S.       | Cum. S. W. W. & N. W.                         | Overcast, thunder.    | 199.8                      |          |                |
| 12         | 181     | 124     | 42      | 41.5                    | 1       | 1.5     | 34      | 42           | 0.18      | S.                      | W.       | Rain.   | Rain.                 | 199.5                      |          |                |
| 13         | 187     | 157     | 37      | 42                      | 1.5     | 4       | 29      | 45           | 0.11      | S.                      | S.       | Clear S. W. rest misty.                       | Clear.                | 192.5                      |          |                |
| 14         | 255     | 177     | 34      | 36                      | 2.5     | 3       | 26      | 44           |           | N. E.                   | S. S. W. | Generally clear.                              | Cumuli.               | 200.0                      |          |                |
| 15         | 293     | 252     | 36      | 37                      | 4.5     | 4       | 25.5    | 43           |           | N. E.                   | W.       | Clear.  | Overcast.             | 199.8                      |          |                |
| 16         | 272     | 213     | 35      | 37                      | 2       | 2       | 28.5    | 38           |           | S. S. W.                | S.       | Snowing.                                      | Thick mist.           | 199.5                      |          |                |
| 17         | 348     | 327     | 38      | 42.5                    | 2       | 2.5     | 29      | 44           |           | Calm.                   | W.       | Overcast, clear N.                            | Mist.                 | 200.0                      |          |                |
| 18         | 376     | 320     | 41      | 40                      | 2       | 2       | 33.5    | 50           |           | S.                      | N. N. E. | Mist.   | Cum. strat. and haze. | 200.0                      |          |                |
| 19         | 359     | 328     | 43      | 50                      | 2       | 3       | 33.5    | 53           |           | Calm.                   | W.       | Generally clear.                              | Few cumuli S. W.      | 200.0                      |          |                |
| 20         | 369     | 353     | 43.5    | 51                      | 1.5     | 3       | 36.5    | 54           |           | N. E.                   | N.       | Thin mist.                                    | Clear.                | 200.0                      |          |                |
| 21         | 442     | 411     | 46      | 52                      | 2       | 6       | 37      | 55           |           | N. N. E.                | W.       | Clear.  | Cum. S. hazy N.       | 200.3                      |          |                |
| 22         | 450     | 381     | 45.5    | 51                      | 1.5     | 4       | 38      | 55           |           | Calm.                   | W.       | Haze and mist.                                | Few cirri.            | 200.5                      |          |                |
| 23         | 396     | 315     | 52      | 51                      | 6       | 3       | 37      | 57           |           | N. N. E.                | W.       | Bright.                                       | Light haze.           | 199.8                      |          |                |
| 24         | 368     | 296     | 47      | 46                      | 2       | 2       | 38      | 50           |           | Calm.                   | S. S. W. | Overcast and haze.                            | Overcast and hazy.    | 200.2                      |          |                |
| 25         | 277     | 194     | 45.5    | 48                      | 2.5     | 2.5     | 37      | 53           |           | S. W.                   | W.       | Thin mist.                                    | Light clouds.         | 199.5                      |          |                |
| 26         | 227     | 179     | 44.5    | 46                      | 3.5     | 2.5     | 38.5    | 52           |           | N.                      | S. W.    | Cirri. & cir. strat.                          | Hazy cum. N. & N. W.  | 190.8                      |          |                |
| 27         | 276     | 237     | 46.5    | 51.5                    | 1.5     | 4       | 37.5    | 55           |           | N.                      | W.       | Cirri.  | Cumuli.               | 200.0                      |          |                |
| 28         | 346     | 294     | 46      | 49                      | 1.5     | 3       | 38      | 53           |           | N.                      | S. W.    | ditto   | Cum. strat.           | 200.0                      |          |                |
| 23.335     | 23.274  | 43.5    | 45.5    | 2.9                     | 3.1     | 34.2    | 50      | 0.52         | 3 1/2 in. |                         |          |   |                       |                            |          |                |

Frost on the 2nd, 4th, 5th, 6th, 7th, 8th, 10th, 13th, 14th, 15th, 16th, 17th, 19th, 20th, 21st, 22nd, 23rd, and 27th.  
 The Max. Temperature by frequent observation of the common Thermometer.—Registering Thermometer out of order.



Meteorological Register kept at Darjiling, for March, 1837.

| Barometer. |         |          |         | Therm. in the Air. |       |      |                           | Regtg. Ther. |                    | Dawl. Hygt.                              |                             | Rn.             |             | Wind. |  | Weather, &c &c. |  | By Ther. No. 1. |  |
|------------|---------|----------|---------|--------------------|-------|------|---------------------------|--------------|--------------------|--|-----------------------------|-----------------|-------------|-------|--|-----------------|--|-----------------|--|
| 10 A. M.   | 4 P. M. | 10 A. M. | 4 P. M. | M. 4 M. bb.        | Min.  | Max. | Dew-point. 10 A.M. 4 P.M. | Inches       | Morn. Even.        | Morning.                                 | Evening.                    | By Ther. No. 1. | By J. P.'s. |       |  |                 |  |                 |  |
| 23.432     | 23.342  | 54       | 49      | 51                 | 45    | 55   | 48                        | 44           | Cm.W.S.W. sig      | Hazy.                                    | Cirri. and haze.            | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 380        | 268     | 55       | 47.5    | 55                 | 48.5  | 40   | 56                        | 46           | S.W. W.            | Cirri.                                   | Clear.                      | 199.8           | 199.8       |       |  |                 |  |                 |  |
| 342        | 254     | 56       | 44      | 56.5               | 46.5  | 40   | 58                        | 44.5         | Cm. S.W. sig.      | ditto                                    | Gen. clear.                 | 199.5           | 199.5       |       |  |                 |  |                 |  |
| 376        | 276     | 52       | 46.5    | 53.5               | 48    | 37   | 55.5                      | 45.5         | N.E. Rariable      | Clear.                                   | Few cum.                    | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 379        | 315     | 53.5     | 46      | 54                 | 49    | 39   | 56                        | 45           | S. S. S. W.        | ditto                                    | ditto                       | 200.3           | 200.3       |       |  |                 |  |                 |  |
| 375        | 329     | 52.5     | 49      | 54                 | 49    | 39.5 | 55                        | 48           | Calm. S. W.        | ditto                                    | Clear.                      | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 384        | 312     | 53       | 47      | 53                 | 47.5  | 40   | 55                        | 47           | ditto S. strong.   | ditto                                    | Clear horizon N. hazy.      | 199.7           | 199.7       |       |  |                 |  |                 |  |
| 417        | 350     | 58       | 51.5    | 56                 | 50.5  | 42.5 | 50                        | 51           | ditto S. W. sig.   | Light haze.                              | Cirri. and haze.            | 199.7           | 199.7       |       |  |                 |  |                 |  |
| 439        | 380     | 53       | 50      | 53                 | 49    | 43.5 | 56                        | 50           | S. W. W.           | Cir. ab. hor. cloudy.                    | Cirri. and haze.            | 199.7           | 199.7       |       |  |                 |  |                 |  |
| 412        | 290     | 55       | 49      | 56                 | 50.5  | 45   | 50                        | 50           | N. S. S. W.        | Clear.                                   | Cirri. and haze.            | 199.7           | 199.7       |       |  |                 |  |                 |  |
| 332        | 255     | 58       | 44.5    | 55.5               | 44.5  | 43.5 | 59                        | 43           | S. light.          | ditto                                    | Cirri. and haze.            | 199.8           | 199.8       |       |  |                 |  |                 |  |
| 388        | 334     | 57       | 46      | 55                 | 47.5  | 41.5 | 59                        | 47           | Calm. W.           | ditto                                    | Clear.                      | 199.6           | 199.6       |       |  |                 |  |                 |  |
| 434        | 304     | 55       | 46      | 54                 | 47    | 41   | 54                        | 45           | S. W. S.           | Few cum. horizon hazy.                   | Cirri and haze.             | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 215        | 167     | 53       | 46      | 54                 | 46    | 37   | 54                        | 44           | N. E. W.           | Clear                                    | Cum. & haze.                | 199.5           | 199.5       |       |  |                 |  |                 |  |
| 307        | 246     | 54       | 47      | 53                 | 47    | 40   | 55                        | 46           | N. E. W.           | ditto horizon hazy.                      | Cum. S. & W.                | 199.5           | 199.5       |       |  |                 |  |                 |  |
| 400        | 310     | 55.5     | 48      | 55                 | 48    | 43   | 59                        | 47           | N. E. W.           | ditto horizon hazy.                      | Cum. S. & W.                | 199.5           | 199.5       |       |  |                 |  |                 |  |
| 396        | 282     | 54.5     | 49.5    | 56                 | 49.5  | 43.5 | 57.5                      | 48.5         | N. E. W.           | Cir. above cum. S. & E. haze.            | N. do. do.                  | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 360        | 240     | 56.5     | 52      | 52                 | 48.5† | 43   | 59                        | 52           | N. E. W.           | Cum. S. thick haze N.                    | ditto ditto                 | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 325        | 246     | 56.5     | 51.5    | 59                 | 52    | 44   | 60.5                      | 51.5         | N. E. W.           | Cum. S. thick haze N.                    | ditto ditto                 | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 270        | 162     | 56.5     | 51.5    | 53.5               | 58    | 45.5 | 60.5                      | 51.5         | W. W. S. W.        | Cum. S. haze N.                          | Cum. S. & W.                | 199.5           | 199.5       |       |  |                 |  |                 |  |
| 276        | 223     | 59       | 50      | 60                 | 51.5  | 43   | 63.5                      | 50           | N. E. Calm.        | Partially overcast, hazy.                | Overcast and hazy.          | 199.5           | 199.5       |       |  |                 |  |                 |  |
| 379        | 319     | 58       | 51      | 56.5               | 51    | 45   | 61                        | 50           | W. Calm.           | Genl. clear. horizon hazy.               | Ovrst. & hazy               | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 396        | 326     | 54       | 50      | 54                 | 51    | 47   | 58                        | 50           | Calm. W.           | Misty.                                   | ditto ditto                 | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 373        | 300     | 53       | 51.5    | 56                 | 52.5  | 47   | 57.5                      | 52.5         | W. Calm.           | Hazy.                                    | ditto ditto                 | 199.8           | 199.8       |       |  |                 |  |                 |  |
| 364        | 314     | 55       | 52.5    | 58                 | 54.5  | 48   | 58.5                      | 52           | W. W. sig.         | Mist and haze. Cum. S. & W. mist N. & E. | ditto ditto                 | 200.0           | 200.0       |       |  |                 |  |                 |  |
| 375        | 284     | 58       | 55.5    | 59.5               | 54.5† | 49   | 61.5                      | 55.5         | N. light. S. W. do | Bright                                   | Bright above horizon. hazy. | 199.6           | 199.6       |       |  |                 |  |                 |  |
| 252        | 158     | 65       | 53.5    | 65                 | 50    | 40   | 66.5                      | 51           | S. W. S. W. do.    | ditto horizon hazy.                      | ditto ditto                 | 199.4           | 199.4       |       |  |                 |  |                 |  |
| 191        | 030     | 61       | 48.5    | 61.5               | 45.5  | 48   | 64                        | 42           | Calm. W.           | Cir. above hor. thick haze.              | Hor. hazy.                  | 199.4           | 199.4       |       |  |                 |  |                 |  |
| 237        | 179     | 62       | 49      | 59.5               | 48    | 47   | 62                        | 41           | Variable. W.       | Horizon hazy. cl. above.                 | Thick haze.                 | 199.7           | 199.7       |       |  |                 |  |                 |  |
| 310        | 221     | 58.5     | 47.5    | 59                 | 48    | 45   | 61.5                      | 43           |                    |  |                             |                 |             |       |  |                 |  |                 |  |
| Mns        | 23.348  | 23.265   | 56      | 48.9               | 55.7  | 48.7 | 43.1                      | 58.4         | 47.3               | 47.2                                     | 0.10                        |                 |             |       |  |                 |  |                 |  |

\* 13th, } Dew was deposited on the bulb at 49° } but immediately vanished. 2nd observation gave the results as stated in the column.  
 14th, } 45° }

† 19th, and 27th. No mistake: the dew-point was carefully observed thus.

‡ Difference between Barometer on Capt. Herbert's station at Darjiling hill, and mine, .063 in. at 50°.



VI.—Note on the Genera *Oxygyrus* and *Bellerophon*. By W. H. BENSON, Esq. B. C. S.

When I described the *Pelagian* genus *Oxygyrus* in the 4th volume of the Journal, from specimens taken on the surface of the Indian and Southern Atlantic oceans, it did not occur to me to search for cognate genera in any other order than that in which the characters of the animal showed its place to be; still less did I expect to find any fossil shell allied to it; but recent consideration of the recorded characters of the fossil genus *Bellerophon* of MONTFORT, which was placed by that author among the *Polythalamous Cephalopodes*, and was subsequently removed by DEFRANCE, on account of the absence of septa, to the neighbourhood of *Argonauta* among the *Monothalamous Octopoda*, suggests the opinion that this shell is improperly associated with the *Cephalopoda*, and that its real station is among the *Nucleobranchous Gasteropoda*, with *Atlanta* and *Oxygyrus*, to the latter of which genera it appears to be intimately related.

The manner in which the umbilicated species of *Bellerophon* are convoluted, the acute keel which is observable in some species, and the sinus which indents that keel within the aperture, are characters which denote the affinity of the two genera; while the prolongation of the lips on either side beyond the umbilicus, and the shelly texture of *Bellerophon*, contrasted with the absence of any prolongation of the lips, the subcorneous nature of the habitation of *Oxygyrus*, and the sudden truncation of its partial keel, form sufficiently prominent characters to distinguish them as generic groups.

That no recent species of *Bellerophon* has hitherto been discovered, may be possibly owing to the *Pelagian* habits of the genus, and the paucity of observers of the interesting Oceanic *Testacea*. Without specimens I am unable to decide on a point on which RANG and DEFRANCE are at issue; the former stating, in his Manuel, that the shell of *Bellerophon* is thin; whereas, in the first volume of the Zoological Journal, DEFRANCE contrasts the great thickness of that shell with the thinness of that of *Argonauta*. Even supposing the latter statement to be correct, weight will not be considered likely to interfere with the *Pelagian* habits conjecturally attributed to the genus, it being now well ascertained that the ponderous *Nautilus Pompilius* ascends to the surface of the ocean with as little difficulty as the lightest of the naked *Cephalopoda*.

P. S.—In vol. 4, p. 175, there is a misprint in regard to the locality of *Oxygyrus*. 29° 30' S. lat. should be 39° 30' S. lat. The

erroneous locality is possessed of a temperate climate, whereas the real one is occasionally subject to the invasion of fields of ice, and therefore more strongly contrasted with the observed habitats in the vicinity of the line, and in the Bay of *Bengal*.

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VII.—*Proceedings of the Asiatic Society.*

*Wednesday Evening, 3rd May, 1837.*

The Hon'ble Sir EDWARD RYAN, President, in the chair.

Colonel D. MACLEOD, ENGS. M. A. BIGNELL, Esq. Capt. S. F. HANNAY, and Dr. W. GRIFFITH, were elected Members of the Society.

Dr. J. SWINEY and Lieut. M. KITTOE, 6th N. I. were proposed by the Secretary, seconded by Capt. CUNNINGHAM.

Professor O'SHAUGHNESSY, proposed by Dr. CORBYN, seconded by Sir E. RYAN.

G. W. BACON, Esq. C. S. proposed by Dr. FALCONER, seconded by Mr. MACNAGHTEN.

FRANCIS ROBINSON, Esq. C. S. *Futtehgurh*, proposed by Captain FORBES, seconded by Mr. MACNAGHTEN.

The Bishop of Cochin-China returned thanks for his election.

Read extract of a letter from Major TROYER, the Society's Agent at *Paris*, proposing that honorary membership should be conferred on Baron SCHILLING of *Cronstadt*, the Mongolian and Tibetan scholar.

[Referred to the Committee of Papers.]

Major TROYER mentions that M. GUIZOT, Minister of Public Instruction, is about to sanction a yearly grant of about 2,000 francs, for procuring copies of Sanskrit manuscripts from *Calcutta*. The study of the Oriental languages is increasing fast on the Continent, and a fresh supply of our publications indented for on *London* has been immediately disposed of. Capt. TROYER's French translation of the *Raja Tarangini* would not issue from the press under a year, on account of the difficulties of printing the Sanskrit text.

Read a letter from the Secretary to Government, General Department, directing the packages of Oriental books to be sent to the Export Warehouse-keeper, and passing the bill for their package, Rs. 17.

The Secretary reported the death of BEHADUR, the pensioned *furash* of the Museum, who had been on the establishment since Sir WILLIAM JONES's time. He was with his wife burnt to death in one of the late dreadful conflagrations.

The account current of the Society with Messrs. MORRIS, PREVOST and Co. shewed a balance of £75 18 1 in favor, after paying the arrears due to the Oriental Translation Fund.

A letter from N. CARLISLE, Sec. Antiquarian Society, dated November, 1836, acknowledged the receipt of the Journal for 1835.

## Library.

The following books were presented.

Two copies of the Address by Earl STANHOPE to the Medico-Botanical Society, January 1836, received from that Society through the Government.

Voyage autour du Monde: the Experimental Voyage of the French corvette *Favorite* in 1830-32, by Capt. LAPLACE,—presented by M. FORTUNE EYDOUX, *Med. Officer and Naturalist of the Frigate La Bonite*.

The Quarterly Journal of the Calcutta Medical and Physical Society, Nos. I and II,—presented by the Editors, Professors Goodeve and O'Shaughnessy.

From the Booksellers; Lardner's Cabinet Cyclopaedia, Literary Men, 1. Meteorological Journal for March,—by the Surveyor General.

## Antiquities.

Read the following letter from Lieut MARKHAM KITTOE, 6th N. I. dated 2nd April, announcing that in compliance with the Society's desire he had visited *Khandgiri*, in order to re-examine the inscription published by the late Mr. STIRLING.

"Agreeably to the request contained in your letter of the 20th ultimo, of which I have the honor to acknowledge the receipt, I proceeded on Monday last to *Bovanewar* and *Khandgiri*, and examined the inscription given by STIRLING in vol. XV. page 313 of the Asiatic Researches. I found that only part of the inscription is given, and that, too, appears faulty. I was unable to attempt a facsimile, not being provided with scaffolding or ladders, which are indispensably necessary for that purpose. I shall therefore again visit *Khandgiri* in the course of a few days, when I hope to be enabled to furnish a detailed account of the place and of the remarkably curious caves and sculpture existing there.

"The inscription is immediately over a tolerably large cave on the southern face of the hill; unfortunately a great part of it is obliterated: I am, however, in hopes of making out a number of the apparently lost letters by a method I adopt of casting different degrees of shade on the surface, and which I have found to assist greatly in deciphering those of which there is the least shadow remaining.

"I did not rest with observing this cave, as I saw no reason why others more extensive should not possess like inscriptions; in this conjecture I was not altogether mistaken: for I found almost all, large or small, to have more or less writing, some only having one word of six or eight letters (probably the names of the originators of these hermitages), others, sentences. I discovered no less than 14, of 13 of which I enclose copies: of these, four are apparently Sanskrit, one (a name) in a new character, and the rest in the column character.

"I have further great pleasure in announcing the discovery of the most voluminous inscription in the column character I have ever heard of: it was shown to me by the same ascetic who had assisted me before.

"It is on a low rocky hill under a high and isolated one, a mile to the west of the *Pooree* road, and near *Piplee* at the N. W. corner of the famous tank named *Konslagung*: it is called '*Aswastuma*.' There is neither road nor path to this extraordinary piece of antiquity. After climbing the rock through thorns and thicket, I came of a sudden on a small terrace open on three sides with a perpendicular scarp on the 4th or west, from the face of which projects the front half of an elephant of elegant workmanship, four feet high: the whole is cut out of the solid rock. On the northern face beneath the terrace, the rock is chiselled smooth for a space of near 14 feet by 10 feet, and an inscription neatly cut covers the whole space. It is divided apparently into four paragraphs, two of about 36 lines each, a third of about 20, and a fourth of 9½ lines, encircled by a deep cut frame or line, evidently to distinguish it from the other inscription. I took a facsimile of it, as well as of 19 lines of the centre paragraph: this took me a whole day to perform. I shall copy the remainder on my return thither before going to *Khandgiri*, as I consider it of far more importance than the one there, a very small part of it being obliterated. A number of new letters occur, and variations of those already known. I am preparing a list of all, which I shall lay before the Society together with all the facsimiles when finished."

Lieut. KITTOE had met with obstructions in his inquiries from a mistrust of the resident bráhmans, which he found to originate in their temples having been robbed some years ago of slabs containing inscriptions, by some officer; and he strongly urged the justice of restoring any such that might have come into the Society's possession. One he suspected, from its dimensions, was the identical one published in the Journal for February.

The Secretary stated that on examination he found this to be the case, as a second inscription of precisely the same character, now under publication, contained the name of the Raja of Orissa, who founded *Bhubaneswar* temple. The Meeting resolved unanimously, that the slabs should be restored, and that Lieutenant KITTOE had their warmest thanks for the suggestion.

Read a letter from Lieutenant SALE, Engineers, dated *Allahabad*, in April, forwarding a facsimile taken on cloth and paper of an inscription at *Kalinjer*, situated at the entrance of a temple of *Muhadeva*.

The greater part of this inscription being obliterated, it will be impossible to make any profitable use of the facsimile, but it has been so far useful as to enable us to ascertain that another large slab in the Museum in the same peculiar character, must be the one stated to have been brought from the same fort and presented by General STEWART.

"The inscription," Lieutenant SALE writes, "is cut on black marble; portions of it are effaced by former clumsy attempts to take copies, which have destroyed the letters. The date appears to be only about 700 years back, and the text contains the name of a certain rája by name PARMALIK. The resident bráhmans give a curious tradition of the origin of the palace and fortifications of *Kalinjer*, attributing them to the virtues of a mineral spring which cured a rája in the *Sutya yuga* from a loathsome cutaneous disorder."

The Secretary exhibited Mr. VINCENT TREGEAR's splendid collection of the GUPTA gold coins, which had been intrusted to him for the purpose by the proprietor, whose zeal in this line of research had been attended with remarkable success.

The box contained 40 gold coins of the series—principally of CHANDRA, SAMUDRA, KUMARA, SKANDA and MAHENDRA GUPTAS: also the new *Vicramáditya* type, and the celebrated ARDOKRO coin.

Lieutenant KITTOE had just added a new name to the same list from a coin in the possession of an officer at *Poorree*. It bears the title *Báladitya*, and a name not yet well deciphered, NARA, perhaps intended for NARAYANA GUPTA.

#### Physical.

The following observations on the declination and inclination of the magnetic needle made at *Diamond Harbour*, were obligingly communicated to the Society by the chief hydrographer of the French corvette *La Bonite*, Captain VAILLANT, during her sojourn here.

The instruments used were of extreme delicacy, with a contrivance for changing the agate of suspension which is found to be worn away by the platina point on which it revolves. The poles of the magnets are changed at every observation so as to remove all index error.

It will be seen that gradual change has taken place since the observations of M. BLOSSVILLE and Colonel HODGSON, published in the *As. Res.* Vol. XVIII. On referring also to experiments made at *Benares* some years ago, the same fact is confirmed. The following table embraces an abstract of the whole of the observations.

#### Declination, or Magnetic variation.

|  | o | '         |
|--|---|-----------|
| 1813, Mean of Maj. HODGSON's obs. in N. West. Provinces, . . . . .             | 0 | 41 East.  |
| 1821, March, observations at <i>Benares</i> , by J. PRINSEP, . . . . .         | 0 | 53 do.    |
| 1822, April, . . . . . ditto, . . . . . ditto, . . . . .                       | 1 | 1 do.     |
| 1825, March, . . . . . ditto, . . . . . ditto, . . . . .                       | 1 | 27 do.    |
| 1827, November, at <i>Calcutta</i> , by Captain FABRE, . . . . .               | 2 | 38 54 do. |
| by Surveyor General, . . . . .   | 2 | 28 36 do. |
| 1828, February, ditto, by ditto, . . . . .                                     | 2 | 41 16 do. |
| 1829, June, ditto, by ditto, . . . . .   | 2 | 24 10 do. |
| 1837, 14th April, at <i>Diamond Harbour</i> , <i>La Bonite</i> , 4 needles, .. | 3 | 37 East.  |



*Inclination, or dip.*

|  |    |     |    |    |
|--|----|-----|----|----|
| 1827, November, at <i>Calcutta</i> , by M. BLOSSVILLE.....   | 26 | 32  | 38 | N. |
| 1832, February, ditto, by J. PRINSEP.....  | 26 | 42  | ?  | N. |
| 1837, April, at <i>Diamond Harbour</i> , mean of four observations, by direct and indirect methods*, with two instruments, ..... | 26 | 39. | 4  | N. |

The Secretary noticed that the bill drawn from Malacca on account of the *Tapir*, had been presented and accepted for Rs. 226 12—but the animal had not yet made his appearance.

M. CHEVALIER, mineralogist of the corvette *La Bonite*, requested the Society's acceptance of a series of Geological specimens from *Corsica*.

Lieutenant KITTOE presented specimens of the rocks in *Cuttack*:—also a snake (*Coluber mycterizans* ?) in spirits; thus described by the donor:—

"The snake was killed by a sipáhí in the billy country west of *Cuttack*. It occurred to me that I had read of a similar reptile, and on referring to the Journal of the A. S. for April, 1835, page 217, I found the description (given there by Lieut. CAUTLEY) of one found near the *Sewalik* hills; mine, however, differs very materially in some points, though it answers nearer to the description given of the "snouted snake" in his note extracted from the *Encyclopedia Britannica*, as will be seen on comparing the following detail:—

|   | ft. | in. |   |
|---|-----|-----|---|
| Extreme length of the reptile, .....              | 4   | 11  | 番 |
| Circumference of the thickest part of body, ..... | 0   | 2   | 寸 |
| Ditto of the neck, .....                          | 0   | 1   |   |
| Breadth of the widest part of the head, .....     | 0   | 0   | 寸 |
| Length of ditto,.....                             | 0   | 1   | 寸 |
| Projection of the upper jaw or snout, .....       | 0   | 0   | 寸 |
| Length from snout to the vent, .....              | 3   | 2   | 寸 |
| Ditto vent to end of the tail, .....              | 1   | 9   | 寸 |
| Abdominal plates or scales, .....                 | 185 |     |   |
| Subcaudal to extremity of tail, .....             | 280 |     |   |

The eye yellow, oval shape, with black horizontal pupil. Color, upper half grass-green, under half pea-green: has a white line on either side 1.16th of an inch wide for whole length, except towards the extremity of the tail, which is very sharp pointed. The lower jaws when the mouth is closed are even or nearly so with the upper, but when open, expand to near double the width. It has double rows of teeth in both the upper and lower jaws, and several in the upper, much larger than the rest, having the appearance of fangs. Its motion is described as that of rapid bounds, moving also swiftly on the leaves and branches of trees: the present specimen, however, was killed in the sandy bed of the *Mahánaddi*, near a bush, while in the act of catching a bird. See Plate XXIII."

Lieut. KITTOE in another note mentions the discovery of extensive coal beds in *Ungool* and *Hindoe*, near the *Kursoo* and *Byturnee* rivers.

The existence of the mineral at these places had before been made known to the Europeans, and specimens had been produced. Lieut. KITTOE was anxious to visit and survey the locality, that he might report in further detail, as, if conveniently situated for water carriage down the *Mahánaddi*, the coal might be made available for steamers touching at *Pooree*. The coal and iron mines are together.

Letter from Professor ROYLE inclosing Prospectus of the London Caoutchouc Company, and inviting the Society's attention to this new commercial product, which might be cultivated to any extent on the *Silhet* frontier and in lower *Assam*.

The present supply, from *Para* chiefly, is many thousand tons less than the demand for home consumption. The mode of gathering the juice for export followed at *Para* is approved of, but the Company or Patentees recommend in lieu of the clay balls, that wooden cylinders about the size of a quart bottle should be used. First dipped into clay water, they are immersed in the crude juice and hung up to dry; the dipping is thus repeated until a layer of Caoutchouc  $\frac{1}{2}$  an inch thick covers the cylinder

\* The indirect method is by taking the dip out of the meridian, and reducing it thereto by a simple calculation; the agreement is very close.



about 6 inches high—this cup (shaped like a tumbler) is then drawn off and the cylinder used again.

The preference given to the solid clean rubber is doubtless consequent on the discovery of a very cheap solvent of Caoutchouc in the volatile coal-oil, which is collected in large quantities at the gas-works. When rectified it resembles in lightness and extreme volatility the distilled mineral naphtha, with which it is probably identical. The Caoutchouc dissolved in this menstruum, and spread in a coat between two folds of silk or cloth, regains its solid and elastic form without injury. Might not the naphtha springs of *Assam* be thus turned to account to introduce the manufacture at once there, with the durable silks of the valley as a basis? Professor ROYLE remarks, that all the trees on which the silk-worm feeds are found to contain the Caoutchouc principle, which is supposed to be essential to the production of the cocoon.

The splendid fossils from Dr. SPILSBURY of *Jabalpúr*, had arrived and were exhibited.

They consisted of the humerus and cubitus of an elephant, upwards of 15 feet in height; also a portion of the pelvis of the same animal; a very perfect elephant's head, ferruginized, of a smaller size, and the head and horns of a buffalo of large size. Dr. SPILSBURY pointed out no less than five new sites of fossils in the *Nerbudda* valley, two of them due to the zealous search of Major OUSELEY. His note along with sketches of the fossils shall appear in our next.

A paper on a new genera of *Raptores*, one on a new species of *Scolopacidae*, and one on a new genus of the *Plantigrades* with a drawing, were received from B. H. HODGSON, Esq.

A second fossil bone was exhibited and presented by Major TAYLOR, brought up from the Fort boring at a depth of 362 feet below the surface.

A drawing of this fragment is given in Plate XXII. : it appears to be a fragment of the *scutellum* or shell of a turtle—much resembling some of the fragments found so plentifully among the *Jumna*, the *Siválík* and the *Ava* fossils. It is mineralized just to the same extent as the bone exhibited at last meeting; sp. gr. 2.5, loss by heating red 10 per cent. A recent fragment found at the Sandheads by Dr. CANTON, which had lost all its *inflammable* animal matter, had a sp. gr. 1.66.

The following specimens of natural history were presented.

A collection of shells, and two snakes preserved in spirits; by Mr. FELL, Indian Navy.

A collection of shells, by Lieutenant MONTRIOU, I. N.

A specimen of *Squilla* Mantis, by Lieutenant MONTRIOU, I. N.

A specimen of the Indian Sucking-fish (*Echeneis Indica*), and a fœtus of a species of ovi-viviparous shark preserved in spirits, by the Hon'ble Colonel MORISON, in the name of Mr. W. EWIN, Branch Pilot.

To the fœtus of the shark the yolk bag is still attached by the funis. Colonel MORISON states that a shark was caught at the Sandheads on the 8th of January last, which when opened was found to contain 17 young ones all marked and spotted like the present specimen, which was one of them, although the mother was of the bluish grey and white color, common to most species of the genus. The Indian Sucking-fish (*Echeneis Indica*) was found attached to her body.

Mr. J. T. PEARSON exhibited to the Meeting specimens of the larvæ, pupa and imago of the *Lamia Rubus*. FAB. and a log of the horse-radish tree, from which he extracted them.

Mr. PEARSON states, that having observed a tree at *Hourah* nearly dead from the ravages of insects, he purchased it, and on examination found it pierced in all directions with holes from  $\frac{1}{2}$  to  $\frac{3}{4}$  of an inch in diameter, perfectly round, and more or less filled with a substance resembling coarse saw-dust. These holes were made by the large, long, square-shaped apodal larvæ of the *Lamia Rubus*; and on the tree being kept about two months, the perfect insects began to appear, which led to an examination of the interior, and the discovery of many specimens in the imago state, and that of the pupa exhibited to the Society. Mr. PEARSON mentioned, that, as appears by the last part published of the Transactions of the Entomological Society, Capt. W. SAUNDERS, who paid much attention to Indian Entomology, had never been able to meet with the pupa of *Lamia Rubus*: therefore it may be new to science.

The change from the larva to the pupa in this species appears to take place about half way between the bark and centre of the tree ; and on changing from the pupa to the imago state, the perfect insect works its way out, by eating with its strong mandibles a circular hole, about the same size as that made by the larvæ in the interior of the tree. The general direction of the passages made by the larvæ is perpendicular ; while that of the exit of the imago is horizontal—the shortest way in fact to the air.

The second experimental year of the Curatorship having expired, Dr. PEARSON read the subjoined report on the operations of the Museum for the past year.

*Report on the Museum of the Asiatic Society, by the Curator,—May 1837.*

At the conclusion of the term of my charge of the Museum last year I stated the improvements that had been made ; and how much it was to be desired that it should not be allowed to fall back into the state in which I found it twelve months before. I am now again called upon to report progress, and to request your attention to form some arrangement by which the evils I then deprecated may be averted, and an improved method adopted, if you wish to alter that which has been followed for the past two years.

The present state of your Museum may be mentioned in a few words. The arrangements of last year have been followed out, by improving the appearance of the apartments and by matting the floors ; while by free ventilation the dampness, from which so much inconvenience was formerly experienced, has altogether disappeared. No enemy now remains indeed but the dust, which does much mischief by settling upon the specimens, and giving a dingy appearance to them ; as well as by frequent leaning being required, and the inevitable injury to which they are in consequence exposed.

Improvements have also been made in the cabinets. They have been all glazed and made ready for the reception of specimens, save one, which is nearly completed. The subscription now on foot for this part of the Museum will render it all that can be wished.

A great number of specimens have been presented during the year ; but owing to the insufficient means taken by their presenters to preserve them, only a portion could be made available to the purposes of the science. I may here state that, preparations, whether of skins or of insects, which have not been preserved by arsenical soap, or by some preparation of arsenic, are not proof against the attacks of insects in this country ; even the so much vaunted solution of corrosive sublimate in spirits of wine is, as I have found after a fair trial, to be almost useless. But of the specimens presented, there have been mounted two hundred and thirty birds, ten of which are of large size ; twenty-eight mammalia, and sixteen reptiles ; eight skeletons have been prepared and articulated in the Museum ; viz. those of the Orang-outang, the cow, the ass, hog, adjutant, two terrapins and a turtle. These are complete, with the exception of the first ; and those who know by experience the labour of preparing and afterwards of joining together, or articulating as it is technically termed, the bones of a skeleton especially in this country, will be able to appreciate the labours of Mr. BOUCHEZ, to whom the praise of executing the manual part of them belongs. The bones of the Orang-outang were presented by Mr. FRITH, but the hands and feet having been unfortunately lost, they were restored in wood from those of the Sumatran gigantic ape in the Museum.

Besides the articulated skeletons there have been presented twenty-two other osteological specimens ; consisting of the skulls of mammalia and birds, the jaw of a whale and the legs of the *Emeu*.

The other specimens consist of a few reptiles and fishes, and a considerable number of insects and shells.

Independent of the above, Mr. HODGSON of *Nipal* sent a series of upwards of eighty well preserved skins of birds, with the intention of their being placed in the Museum, as the originals from which some of the plates of his forthcoming great work have been taken; but circumstances having rendered it desirable to send them for the examination of a naturalist of eminence in England, they were, on his promising speedily to replace them, delivered over, by directions from the Secretary, for transmission there.

With regard to the financial arrangements, the Secretary did not think himself empowered to advance for contingencies any sum beyond that voted by the Society. But that sum being nearly absorbed by the salaries of Mr. BOUCHEZ and his nephew, who is employed to assist him, I have paid the remainder of the charges myself; and in this manner expended Co.'s Rs. 138 15 6, more than I have received.

A few words may be expected from me as to the future management of the Museum. Much has been urged against expending the funds of the Society for this purpose; and a strong protest on the same side, signed by five Members, has also been given in. So far as my own feelings are in question, I shall be happy to yield to this or any other view of the subject taken by the majority. Although I do not agree with those who think money ill expended, which is expended upon an object that contributes to further the pursuits of any considerable portion of the Society. And my respect for the protest would not have been less had it been signed by the older Members of the Society, instead of by those who had been elected only two or three months before the proceedings took place, against which they thought proper to protest; who mistook the mere lodgment of money in public securities for a vested fund; and who had not, I believe, any one of them, ever seen the Museum previous to, or since the new arrangements were made! Under these circumstances I am not inclined to allow much weight to the protest, nor to sacrifice our Museum in accordance with the views of the protestors. It is true, a substitute for a Curator has been proposed in a committee, each member of which should undertake a particular department; and as a body assisting with their advice, and superintending the operations of the Curator, such a committee would be of great service; but as an executive engine, a committee is always worse than useless, and I anticipate nothing but failure in the scheme. If your Curator is not a paid and responsible officer, you will, in effect, have no Curator at all; and if you have no Curator, you will have no Museum; while I am sure a Museum is, in the present direction of men's minds towards natural history, essential to the well-being, if not even to the existence of the Society. If our own funds cannot support our Museum as it should be supported, we ought to apply to the Government to assist us; when, judging from the liberal views of science taken by the present Governor General, and the anxiety he has evinced to encourage that of natural history in particular; coupled with the fact that the Court of Directors have ever been the patrons of zoological pursuits; there is little fear of our making the application in vain. I think the advantages of adopting this plan would be great and manifold; our Museum would be placed on a vigorous and permanent footing; and be the means of enhancing the prosperity of our institution, and of conferring no slight benefit upon the public: while we should soon be able to wipe off the reproach so repeatedly and justly thrown upon the name of Englishmen in the East,—of leaving to distant nations the task and the honor of gleaming in our own field the treasures of natural history, which we ourselves are indifferent and too ignorant to reap.

J. T. PEARSON.

*Resolved*, that the Report be referred to the Committee of Papers for the purpose of drafting such arrangement as the Society's funds may permit for the maintenance of the Museum of natural history on the most efficient footing.

Meteorological Register, kept at the Assay Office, Calcutta, for the Month of April, 1837.

| Day of the Month. | Observations at 10 A. M.     |                               |                      |                         |                    |            | Observations at 4 P. M. |  |                     |                  |                      |                         | Calculated Humidity. |            |                  | Register Thermometer extremes.             |                     | Wind. | Weather.         |                             |               |             |                        |  |            |        |
|-------------------|------------------------------|-------------------------------|----------------------|-------------------------|--------------------|------------|-------------------------|--|---------------------|------------------|----------------------|-------------------------|----------------------|------------|------------------|--|---------------------|-------|------------------|-----------------------------|---------------|-------------|------------------------|--|------------|--------|
|                   | Old Stand. Barometer at 32°. | New Stand. Barometer reduced. | Thermome-ter in air. | Depression of wet-bulb. | Do. by Les. Hygro. | Dew-point. | Hair Hygrometer.        | Centesimal ten-sion of vapour by wet-bulb. | Do. by hair Hygrom. | Do. by wet-bulb. | Thermome-ter in air. | Depression of wet-bulb. | Do. by Les. Hygro.   | Dew-point. | Hair Hygrometer. | Centesimal ten-sion of vapour by wet-bulb. | Do. by hair Hygrom. |       | Do. by wet-bulb. | Heat in sun's rays on roof. | Heat on roof. | 10 A. M.    | 4 P. M.                | Morning.   | Afternoon. | Night. |
| 1                 | 29.796                       | 30.761                        | 57.7                 | 15.5                    | 15.1               | 83.8       | 86                      | 70   | 29.690              | 30.588           | 58.9                 | 18.9                    | 21.4                 | 57.7       | 79               | 29   | 33                  | 40    | 73.5             | 118.2                       | SW.           | SW.         | hazy, dull.            | cloudy, storm.   | do do      |        |
| 2                 | 3.007                        | 7.75                          | 70.5                 | 16                      | 0.5                | 67.0       | 87                      | 62   | 7.216               | 6.666            | 68.6                 | 10.9                    | 10.4                 | 66.2       | 81               | 56   | 56                  | 61    | 64.0             | 104.5                       | W.            | E.          | cloudy.                | fine.  | do do      |        |
| 3                 | 3.004                        | 8.84                          | 78.4                 | 16.2                    | 0.3                | 62.3       | 84                      | 53   | 7.21                | 7.31             | 86.9                 | 13.6                    | 12.4                 | 63.8       | 76               | 52   | 46                  | 52    | 62.5             | 113.0                       | sw.           | sw.         | overcast.              | numb.  | do do      |        |
| 4                 | 3.033                        | 8.01                          | 82.2                 | 16.7                    | 0.3                | 60.3       | 90                      | 70   | 6.883               | 6.789            | 82.1                 | 9.1                     | 17.3                 | 16.1       | 58.0             | 63   | 41                  | 65    | 48               | 60.8                        | 110.0         | S.          | sw.                    | cumuli.  | cum. str.  | do do  |
| 5                 | 3.008                        | 7.71                          | 83.7                 | 15.8                    | 0.3                | 60.6       | 82                      | 55   | 7.03                | 6.621            | 82.7                 | 9.2                     | 18.7                 | 20.2       | 59.8             | 69   | 32                  | 38    | 42               | 69.2                        | 115.0         | w.          | sw.                    | clear.   | cloudy.    | do do  |
| 6                 | 3.006                        | 7.27                          | 85.3                 | 16.3                    | 0.3                | 63.7       | 81                      | 67   | 6.94                | 6.334            | 83.9                 | 13.9                    | 14.3                 | 62.0       | 79               | 50   | 25                  | 30    | 57               | 75.5                        | 113.1         | w.          | sw.                    | clear.   | cumuli.    | do do  |
| 7                 | 3.000                        | 6.98                          | 85.3                 | 16.3                    | 0.3                | 63.7       | 88                      | 66   | 6.922               | 5.57             | 95.7                 | 22.5                    | 27.2                 | 52.7       | 59               | 25   | 25                  | 30    | 75.4             | 114.7                       | W.            | SW.         | clear.                 | cloudy.  | do do      |        |
| 8                 | 3.000                        | 7.00                          | 86.1                 | 17.0                    | 0.7                | 73.9       | 80                      | 72   | 6.90                | 5.53             | 91.6                 | 9.2                     | 9.5                  | 75.7       | 84               | 65   | 61                  | 66    | 69.8             | 115.6                       | S.            | S.          | cloudy.                | stratus.   | do do      |        |
| 9                 | 3.033                        | 7.52                          | 83.5                 | 16.1                    | 10.0               | 77.2       | 82                      | 51   | 7.222               | 6.519            | 86.7                 | 13.7                    | 13.2                 | 66.0       | 74               | 48   | 52                  | 49    | 77.4             | 95.2                        | S.            | n.          | clear.                 | stratus.   | do do      |        |
| 10                | 3.014                        | 7.69                          | 83.6                 | 16.1                    | 11.0               | 66.1       | 71                      | 43   | 6.670               | 6.18             | 91.5                 | 17.5                    | 17.5                 | 63.0       | 70               | 37   | 41                  | 44    | 72.6             | 115.0                       | W.            | SW.         | heavy fog.             | cum. cir.  | do do      |        |
| 11                | 3.000                        | 7.51                          | 86.9                 | 16.6                    | 1.4                | 63.6       | 86                      | 70   | 6.660               | 6.06             | 94.8                 | 25.5                    | 29.0                 | 48.0       | 48               | 20   | 22                  | 20    | 75.4             | 126.0                       | w.            | W.          | do do                  | do do  | do do      |        |
| 12                | 3.032                        | 7.47                          | 86.9                 | 16.4                    | 1.2                | 63.6       | 86                      | 70   | 6.660               | 6.10             | 94.8                 | 23.8                    | 22.4                 | 49.0       | 48               | 20   | 22                  | 20    | 75.4             | 126.0                       | w.            | W.          | do do                  | do do  | do do      |        |
| 13                | 3.033                        | 7.12                          | 86.3                 | 17.1                    | 1.5                | 71.0       | 76                      | 55   | 6.585               | 5.48             | 97.7                 | 27.0                    | 26.0                 | 53.2       | 51               | 19   | 24                  | 23    | 72.6             | 119.1                       | W.            | W.          | do do                  | do do  | do do      |        |
| 14                | 3.030                        | 6.59                          | 86.3                 | 17.1                    | 1.5                | 62.7       | 63                      | 34   | 6.52                | 4.99             | 95.4                 | 22.2                    | 20.3                 | 55.8       | 57               | 21   | 26                  | 28    | 73.1             | 126.2                       | SW.           | N.W.        | do do                  | do do  | do do      |        |
| 15                | 3.021                        | 6.74                          | 86.2                 | 18.0                    | 1.2                | 62.7       | 72                      | 53   | 6.46                | 5.72             | 90.6                 | 24.8                    | 26.5                 | 52.0       | 48               | 20   | 22                  | 22    | 75.4             | 128.2                       | n.            | O.          | sl. fog.               | c. str.  | hazy.      |        |
| 16                | 3.022                        | 7.04                          | 86.7                 | 17.4                    | 1.4                | 61.0       | 74                      | 48   | 6.564               | 5.11             | 99.9                 | 22.1                    | 24.4                 | 55.4       | 51               | 24   | 24                  | 24    | 73.0             | 120.0                       | SW.           | W.          | do do                  | do do  | do do      |        |
| 17                | 3.022                        | 7.04                          | 86.7                 | 17.4                    | 1.4                | 61.0       | 74                      | 48   | 6.564               | 5.11             | 99.9                 | 22.1                    | 24.4                 | 55.4       | 51               | 24   | 24                  | 24    | 73.0             | 120.0                       | n.            | O.          | sl. fog.               | c. str.  | hazy.      |        |
| 18                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 19                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 20                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 21                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 22                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 23                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 24                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 25                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 26                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 27                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 28                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 29                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| 30                | 3.022                        | 6.95                          | 87.3                 | 18.1                    | 1.3                | 61.0       | 76                      | 53   | 6.483               | 4.44             | 100.2                | 27.8                    | 26.0                 | 50.3       | 50               | 26   | 22                  | 22    | 75.4             | 128.2                       | W.            | W.          | do do                  | do do  | do do      |        |
| Mean,             | 29.764                       | 7.32                          | 87.4                 | 16.5                    | 10.8               | 68.6       | 80                      | 58   | 61                  | 29.639           | 5.87                 | 94.4                    | 19.4                 | 20.4       | 61.7             | 64   | 38                  | 39    | 73.6             | 116.6                       | 0.9           | South west. | unusually hot and dry. | There was a slight water-spout on the 22nd. A very destructive one occurred in March at Jessore. |            |        |









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